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ADDRESSES AND ORIGINAL ARTICLES

THE RÔLE OF THE HÆMOLYTIC STREPTOCOCCI IN INFECTIVE DISEASE.

By C. C. Okell, *M.C.*, M.B. Camb., M.R.C.P. Lond.,
PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF LONDON, AND BACTERIOLOGIST TO UNIVERSITY COLLEGE HOSPITAL, LONDON.

LECTURE III.

CLINICAL AND EPIDEMIOLOGICAL INTER-RELATIONSHIPS IN STREPTOCOCCAL DISEASE.*

In my previous lectures I have discussed some of the more general features of pathogenic effects due to the hæmolytic streptococci and have tried to establish the view that a large number of streptococci from the most diverse sources in human disease have apparently the same weapons of attack, a pyogenic property and an erythrogenic toxin. That while one or other of these weapons may be predominantly evident in a given human disease, under experimental conditions potentialities in both directions are very general, if not universal, among the hæmolytic streptococci.

"If anything is established," said Cohnheim, "it is what may be called the distinct individuality of the different infectious diseases," but in recent years we have come to recognise that certain balances between host and parasite may produce very dissimilar clinical entities though the species of parasite and host remain the same. Thus herpes and chicken-pox are both diseases with distinct "individualities" though we may see the same virus producing the two diseases in different individuals. It is not one of the least striking things about streptococcal disease that bacteria so similar in form and experimental properties should give rise to so many and well-defined clinical and epidemiological types of disease. Since the earliest days of streptococcal research two views have been held as to the relationship of the streptococci to disease. The first is that each well-defined clinical entity is associated with a special kind of streptococcus. This, the "specificity" view, is expressed in the use of such terms as *S. scarlatinæ*, *S. erysipelatis*, *S. pyogenes*, &c., as specific names for the streptococci associated with the different diseases. The second view is that different diseases due to the hæmolytic streptococci are due essentially to one species of streptococcus. According to this view, factors of varying virulence and toxicity on one side and varying susceptibility on the other are held to account for the different streptococcal diseases outwardly so unlike. This is what I have called the "unitarian" view. I cannot here follow the varying fortunes of these two rival theories, though the history in itself is full of interest. It is perhaps sufficient to say that before the publications of the Dicks and Dochez in 1924, a more or less unitarian view held sway and was expressed by such workers as Marmorek,[1] Neufeld,[2] and Aronson.[3]

The far-reaching influence of Jochmann's [4] view, that scarlet fever was not due to streptococcal infection allowed the problem of scarlet fever to be shelved and therefore one of the outstanding difficulties in accepting the unitarian view was avoided. The work of the Dicks and Dochez, though it only put on a more solid footing the views held many years previously by Moser, Gabritschevsky and Savchenko on the toxigenicity of scarlet fever streptococci, at once led nearly all observers to focus on the specificity view because at first sight it was thought that only such a view would be in accord with the peculiar immunological properties of the erythrogenic toxin they described. A further encouragement to the specificity view was given by the work of Birkhaug on erysipelas. This observer came to the conclusion that the pathogenic effects of hæmolytic streptococci from cases of erysipelas had specific characters; he also studied a toxin resembling that obtained from scarlatinal strains, but he considered it to be immunologically distinct. I may mention that my colleagues and I have been unable to obtain any experimental evidence for the existence of specific characters in the pathogenicity of strains from erysipelas, nor were we able to distinguish between toxins obtained from erysipelas strains and those from scarlatinal strains.[5]

A Unitarian Interpretation.

I now propose to attempt an interpretation of the clinical and epidemiological features of streptococcal diseases accepting as basis the "unitarian" view of the streptococci. Such a sketch can only be made in outline and tentatively drawn. Modern bacteriological and immunological methods provide powerful weapons of investigation which have as yet been only half-heartedly employed in the clinical and epidemiological fields. A more thorough-going application of these methods would undoubtedly clear up some of the difficulty which at present surrounds the inter-relationships of streptococcal disease.

SCARLET FEVER.

It is not necessary to marshall the evidence in favour of the belief that scarlet fever is entirely an infection with hæmolytic streptococci. This has been done many times during the past few years and it would be difficult to find any serious flaw in the evidence. Uncomplicated scarlet fever may be looked upon in the main as a local infection of the nasopharynx due to hæmolytic streptococci with little if any deep penetration of the micro-organism, but accompanied by a considerable absorption of its erythrogenic toxin. Blake and Trask [6] have actually shown that the toxin may reach a high level in the blood of patients in the early stages of scarlet fever. The systemic effects of the infection rapidly disappear with the development of antitoxin in the blood which takes place after the first few days of the disease. The clinical condition obviously suggests that the streptococcus is in a biological phase during which it readily secretes its toxin, a suggestion supported by the observation that the majority of strains from scarlatinal throats are exceptionally powerful producers of toxin in vitro. Some strains, such as the Dochez and Dick strains, maintain their in vitro toxigenic properties uninfluenced by several years of subculture; other strains I have met with appeared to lose their toxigenic power after a few weeks of subculture.

That certain strains remain more constantly in a toxigenic phase than others may be deduced from the work of Griffith and his co-workers. Griffith's four types may be looked upon as epidemic scarlatinal strains, and between 1926 and 1930 Allison [7] found that types II. and III. accounted for 42·6 per cent. and all four types together for

* The Third Milroy lecture for 1932 delivered before the Royal College of Physicians of London on Feb. 25th. Lectures I. and II. have appeared in previous issues of THE LANCET.

63·4 per cent. of 600 cases observed in England. Excepting for their peculiarities in agglutination Griffith's strains show only quantitative differences from other strains of hæmolytic streptococci, and we are fortunate in obtaining knowledge of their serological peculiarities.

The streptococci occurring in scarlet fever, at least in the disease as we see it to-day, are much less active in their pyogenic and invasive than in their toxigenic properties, but the pyogenic and invasive properties show themselves in the complications—from local suppurations which are still sufficiently common to septicæmia which is fortunately more rare. I think that there is little doubt from the history of the older and more fatal epidemics of scarlet fever that at one time the pyogenic and invasive factors were very much more important than at present. The great and fatal epidemics of the latter part of the eighteenth and the earlier part of the nineteenth centuries seem to have owed their terrors to the virulence of their pyogenic effects rather than to symptoms ascribable to an exaltation in the power of producing erythrogenic toxin.

SURGICAL SCARLET FEVER.

Few forms of streptococcal disease raise more interesting problems in relationship to the "unitarian" view than the so-called surgical scarlet fever. On the whole it is a subject with a meagre literature; Alice Hamilton [8] in an excellent review estimated that in 1904 there were useful records of less than 200 such cases; but it attracted considerable attention in the 'sixties and 'seventies of last century.

Howse,[9] at that time a surgeon to Guy's Hospital, gives an excellent description of an epidemic occurring in the Astley Cooper ward of that hospital in 1878. He quite clearly recognised that these instances following surgical operations and burns could not be distinguished from ordinary scarlet fever, but he frequently found it difficult to explain how they arose and he suggests that before the introduction of Listerian methods such cases frequently merged into septicæmia.

In the same volume of the *Guy's Hospital Reports* [10] there also appears an article which gives a very complete account of cases of surgical scarlet fever occurring at the Evelina Hospital during the 'seventies. The material was provided by W. E. Paley but was worked up with a commentary by James Goodhart. Goodhart came to the conclusion that these were true cases of scarlet fever, and from a study of the grouping of them he considered that the infection passed from patient to patient. He adds that almost all the patients were removed to the fever ward yet there was no instance of them afterwards contracting scarlet fever there.

Sir James Paget [11] in a clinical lecture given at St. Bartholomew's Hospital in 1863 devoted considerable attention to surgical scarlet fever. "By some," he says, "these cases may be supposed to have been only casual coincidences of scarlatina with surgical diseases, but, if this were so, we ought to find a proportionate number of cases among surgical patients not operated upon. But this does not happen."

At the time that these observers wrote the specific propagation of disease was more or less rigidly held and although a typical scarlet fever case could rarely be found to account for the origin of the infection it was believed that it did arise from such a source. A very instructive case was reported in the *British Medical Journal* in 1879 by Ffolliott [12] of Peshawar. A private of the Fusiliers at Ali Musjid, carelessly threw a lighted match on some gun-powder and was severely burnt on the leg, arms, and face. Four days later he developed a typical scarlatinal rash which ran a typical course and was followed by desquamation. Ffolliott, though he admits that scarlet fever was not unknown in India, had never encountered a case in twelve years' service and there was no such disease known in the camp or its surroundings. Joseph Fayrer, whose experience in Indian practice was at that time unrivalled, stated that he had only seen two mild cases of scarlet fever in India, both in European children and both clearly traceable to a box of infectious clothes sent out in a recently arrived steamer. This seems to be a particularly clear case of surgical scarlet fever arising de novo, but it will be generally admitted that it is usually impossible to trace these cases to a definitely scarlatinal source of infection. A passage from Creighton implying a unitarian opinion is worth quoting as indicating the views of a very acute student of epidemic disease. He states:—

"It happens from time to time in surgical wards of hospitals for children where many cases of suppurating diseases (especially of the bones or joints) are aggregated and kept together, that groups of the patients acquire a scarlet rash, or an erysipelas rash, or a hybrid form of rash—along with the constitutional symptoms of scarlatina," and he adds, "it is not without significance that there may be an element of erysipelas in such cases." [13]

The so-called surgical scarlet fever has not yet been adequately investigated by modern methods. There seems little doubt that on the surface of burns and extensive wounds the conditions for the multiplication and activity of streptococci are closely similar to those obtaining in the throat. Deep invasion from established granulating surfaces does not readily take place, but toxin production and absorption are probably little hampered. Thus, if the streptococcus reaches a sufficiently toxigenic level we can understand that a condition outwardly resembling scarlet fever may take place as a result of surface infection of a wound and it is unnecessary to assume a pre-existing scarlatinal source. Very few direct bacteriological observations have been made on these cases which might permit us to assess the relative parts played by throat infection and wound infection. Toyoda [14] states that the throa of seven cases of surgical scarlet fever were negative for hæmolytic streptococci and in a recent case which has come under my notice of a child suffering from a burn who developed scarlet fever without there being any obvious scarlatinal source of infection, the throat was negative, while the swabs from the surface of the burn grew a copious and almost pure culture of hæmolytic streptococci. It is worthy of note that while ordinary scarlet fever has occasionally been recorded as having been propagated from a surgical case, this is by no means the rule. It would be interesting to know whether surgical scarlet fever tends to occur, as we should expect, in Dick-positive persons, whether the reaction becomes negative at the end of the disease, and whether the early rash in such cases regularly gives a positive Schultz-Charlton reaction as it certainly did in a case recently in University College Hospital.

INFECTIOUS SORE-THROAT.

Under the designation of streptococcal sore-throat we probably have to recognise more than one ætiological entity. There is a common sore-throat, amounting to little more than a dryness of the pharynx, which is often found to be associated with a profuse growth of streptococci of the non-hæmolytic series. There is also the well-recognised "septic" type of infectious sore-throat which is almost invariably associated with the presence of hæmolytic streptococci. That this is a highly infectious condition is generally admitted, but considering the enormous toll of ill-health and permanent disability it exacts from the ordinary population it has been given little enough bacteriological and epidemiological attention, though this omission is now being made good by the work of Glover [15] and his colleagues

at the Ministry of Health. It is not too much to say that our hospital ear and throat departments are mainly occupied in dealing with the results of its ravages. When we consider that the streptococci found in this condition have not only obvious pyogenic power but can also produce the erythrogenic toxin in vitro it is very difficult to draw a line between it and scarlet fever. Every medical man must have met with epidemics, small or large, in which every feature and complication of scarlet fever occurs with the exception of those referable to a high degree of poisoning with the specific toxin—that is to say the rash. Perhaps I may be permitted to quote a small outbreak in my own experience.

A child of 8, Dick-positive, contracted an acute septic throat, presumably from her schoolmistress who was similarly affected. The onset was sudden with high fever, frequent pulse, and furred tongue, and the infection spread rapidly and relatively painlessly to the middle ear on both sides. The disease was transmitted in rapid succession to two adults in the same household. In both the latter the disease was severe but no complications followed. From the throat of each of the three cases an almost pure culture of hæmolytic streptococci was obtained. These streptococci were found in the laboratory to be moderately good producers of erythrogenic toxin.

If, as we could no doubt have done experimentally, we had injected the toxin thus made we would have completed the picture of scarlet fever. The following instance, also in my own experience, illustrates but in a different way the difficulties of drawing a sharp distinction between these throat conditions.

Scarlet fever had broken out in a school and the school was closed. Three children who were not thought to have been in particularly close contact with infection were sent home and were isolated very completely from other children by an intelligent mother. One child then developed a mild pyrexia and septic sore-throat and this was soon followed by the development of a faint patchy rash not at all characteristic of scarlet fever. This child was at once isolated from her fellows. A day later another of the children developed fever and sore-throat, without a trace of rash. The second victim was promptly isolated with her already affected sister. Both children were Dick-positive and from the throat of each a profuse growth of hæmolytic streptococci was obtained. The streptococci isolated were moderately potent producers of erythrogenic toxin in vitro. The rash of the first child did not give Schultz-Charlton blanching; it was indeed of a type unsuitable for the application of the test.

At the end of a week the two affected children had recovered from their illness. They were retested by the Dick test and found still fully positive and the cultures from their throats showed only a few hæmolytic colonies. On the indications of those observations it was considered that the disease was not likely to be scarlet fever and as isolation arrangements were proving a difficult domestic problem it was decided to release the two elder children from quarantine and allow them to mix with their little sister who was also Dick-positive. Two days later this child developed a high fever and sore-throat and in another 24 hours was covered with a typical scarlet rash. From this child also an almost pure culture of hæmolytic streptococci was obtained, though the throat had been negative at the earlier examination. All these children were being carefully isolated from other children and there was no known case of infection in the immediate neighbourhood.

Such a sequence suggests strongly that the third and typical case had been generated in direct succession to the other two cases which certainly could not have been diagnosed as scarlet fever. The process involved seemed closely similar to the exaltation of virulence obtained in the laboratory by animal passage. It is interesting to conjecture what would have happened if nature's experiment had been allowed to continue without interference and the two recovered, but still Dick-positive elder children had been re-exposed to the infection which they had themselves so obviously propagated. Many outbreaks are recorded in which sore-throat without rash and typical scarlet fever seem to have been propagated indifferently, including recent instances reported by Stevens and Dochez [16] and by Butler,[17] and Glover and Griffith.[18] In most of these epidemics there has been no record of the Dick reaction of the infected individual, so we cannot easily separate the contribution of parasite and host in producing such variable effects. Since Dick testing has been carried out it has been repeatedly observed that Dick-negative individuals appeared to contract septic throats from scarlatinal patients without showing any sign of rash (Stevens,[19] Nicholls,[20] and others). These various anomalies of streptococcal infection illustrate how impossible it is to give to streptococcal diseases separate clinical names which will imply any specific ætiology.

The Dicks [21] in 1921, in a series of 30 volunteers, produced sore-throat without rash in seven by inoculating their throats with scarlatinal streptococci. Subsequently they found that the same scarlatinal streptococcus could produce typical scarlet fever in some patients and simple sore-throat in others. More recently again they have shown in another human experiment that streptococci from erysipelas inoculated into the throats of five volunteers produced an acute sore-throat in three. Unfortunately the susceptibility of the subjects as judged by the Dick test is not indicated in any of these experiments. We may well ask ourselves what would happen if a streptococcus from a case of erysipelas or suppuration, selected for its high toxigenic power, were inoculated into the throat of a Dick-positive child. The experiment might be crucial for the unitarian view.

It has been, I think, the belief of nearly all experienced observers from the time of Withering to the present day that scarlatinal epidemics may arise by the gradual development of sore-throat cases and eventually die away in atypical cases before the epidemic is finally extinguished. Withering [22] indeed held the view that scarlet fever as he saw it in Birmingham in 1778 and what Fothergill and Huxham described as ulcerated sore-throat are one species of disease, "that they owe their existence to the same specific contagion; that the varieties in their appearance depend upon contingent circumstances, and that the greatest differences are not greater than those of distinct and confluent small-pox." Are we to name these epidemics sore-throat or scarlet fever? Surely it is simpler to suppose that the streptococcus, in the first place non-scarlatinal, has exalted its toxigenicity by passage from individual to individual until it arrives at a phase when it can produce scarlet fever in almost every Dick-positive individual it invades. And if we recognise that so many streptococci from normal persons and those affected with non-scarlatinal diseases have the capacity for producing the erythrogenic toxin, are we not forced to admit the possibility that almost any hæmolytic streptococcus may at times generate scarlet fever?

The view here expressed obtains support from the recent work of Glover and Griffith [18] on school epidemics of nasopharyngeal disease. The gist of this as it affects the present subject is that these workers have shown that when epidemics of influenza, severe common cold, measles, and tonsillitis occur in schools there appears to be an exaltation of the epidemic activities of hæmolytic streptococci both in the pyogenic and the erythrotoxic direction. Not only do such pyogenic affections as otitis and mastoid disease become common, but cases of scarlet fever may arise apparently de novo. These observations are of great interest, for they afford a handsome confirmation of the unitarian view, and one that we had every right to expect ex hypothesi.

The reverse also seems to hold, that because a hæmolytic streptococcus is derived from a case of scarlet fever it is by no means necessarily capable of

producing scarlet fever in other persons. It is generally recognised that anything up to 50 per cent. of scarlet fever patients kept for a reasonable period in an isolation hospital have in their throats hæmolytic streptococci which are in many instances serologically of the same type as the original infecting micro-organisms.[23] Such patients when they are discharged to their homes only generate a very small proportion of "return cases," rarely more than 2 or 3 per cent. This gives ground for the presumption that during sojourn in the throats of convalescents the streptococcus passes out of the epidemic scarlatinal phase.

Creighton's remark may here be quoted that "Every medical practitioner knows, if some laymen and legislators do not, that scarlatina is sometimes highly contagious, and sometimes hardly contagious at all," much the same view as that held by that fine observer Robert Willan over fifty years before.

The care which is taken in modern hospitals to avoid the aggregation of septic streptococcal cases prevents us from seeing nowadays the natural propagation and exaltation of streptococcal epidemics lamentably common in such institutions during the earlier part of the last century. But in one department at least of hospital practice from causes which are not at all easily controlled, something of the old epidemiological *mis-en-scène* is maintained. I refer to the throat and ear departments of hospitals. Here from the nature of the work, it is difficult to prevent the aggregation of septic cases and quasi-septic cases (under which heading we must, I think, include the majority of tonsillectomy cases). In many such departments scarlet fever is a recurring trouble though every care is taken to prevent the entrance of frankly scarlatinal infection. Anna Williams[24] has found that from 25 cases of excised tonsils with no history of recent exposure to scarlet fever, 14 strains of hæmolytic streptococci were isolated and of these, six produced toxic filtrates neutralised by convalescent scarlet fever serum. It does not then seem necessary to regard scarlatinal cases occurring under these conditions as due to the introduction of scarlet fever, as such, into the hospital. If there is anything in the conception of exaltation of virulence or toxigenicity by human passage we have here ideal conditions for both dissemination and exaltation. Even if we exclude the special problem of scarlet fever from consideration, the epidemiological conditions met with in throat wards of hospitals are worthy of more study than seems to have been given to them. Is it not to beg the question to accept that the cases of otitis and mastoid disease which sufficiently frequently complicate tonsillectomy are due merely to the "stirring up" of intrinsic infection? That latent infection can readily be stirred up by operative injury no one would deny, but in "stirring up" a latent infection in the individual due to such a versatile, dangerous, and readily disseminable bacterium as the hæmolytic streptococcus may not we also, by passing a strain from one who is tolerant to it to one who is not, be "stirring up" an epidemic? I have been able to find no statistics bearing on the relative frequency of complications after tonsillectomy in patients operated upon in hospitals and in private practice, but if they were available they might be interesting. Joe[25] quotes the saying of an ear and throat surgeon who said "that sometimes while the patients on whom he had performed tonsillectomy were contracting scarlet fever, the patients on whom he had performed mastoid operations were beginning to suffer from erysipelas." This is a modern saying, but it will have a familiar ring to anyone who has looked into the history of septic infections in pre-Listerian times.†

Rheumatic Fever.—I do not propose to consider the possible rôle of the hæmolytic streptococci in the causation of rheumatic fever though this has been the subject of much interesting work by Schlesinger,[26] Coburn,[27] Sheldon,[28] Collis,[29] and Glover and Griffith[30] during the last two or three years. The admirable epidemiological inquiries of Glover and Griffith give much weight to the views originally put forward by Mantle,[31] of Durham, in 1885, as to the close connexion between tonsillitis and rheumatic disease, but the majority of those who are most conversant with the clinical and pathological features of rheumatic disease seem to find it difficult to link them with the known pathological features of infection with the hæmolytic streptococci. On the principle laid down by Hume in his "Essay on Miracles," that the greater the improbability the more rigid should be the proof, we can only await with caution further developments along this line of work.

ERYSIPELAS.

Fehleisen[32] in his classical paper written in 1882 records having produced typical erysipelas in six out of seven human beings by scratching into their skins a pure culture of a streptococcus from erysipelas. Fehleisen held that his coccus was not identical with the streptococcus which Ogston had previously isolated from pus. The specificity of the erysipelas organism was however, soon challenged on morphological, cultural, and experimental grounds by Widal,[33] E. Fränkel,[34] Petruschky,[35] Marmorek,[36] W. Bulloch,[37] and others. Not only did Petruschky show that human erysipelas could be produced by inoculating pure cultures from an abscess, but he and others found that an essentially similar disease could be produced by inoculating staphylococci and *Bact. coli* into the skin. Panton and Adams[38] record an instance of an experiment, accidentally performed, in which the same streptococcus introduced into two separate lesions gave rise to local suppuration in one place and typical erysipelas in the other, and Tillmanns[39] refers to an experiment in which deep suppuration was produced in man by the inoculation of a pure culture of erysipelas streptococcus. Even more severe results followed the inoculation of Fehleisen's streptococcus as in the fatal case recorded by Janicke and A. Neisser[40] as well as two fatal cases mentioned by Coley,[41] and there may well have been other such cases which for obvious reasons were not published.

John Hunter once expressed the view that erysipelas was "the result of a peculiar constitution in the patient without which the same irritation would have resulted in common inflammation." We now tend to translate what Hunter called "peculiar constitution" into immunological terms and immunological research might do much to clear up the mystery of the peculiar features of erysipelas. The tendency of erysipelas simplex to clear up within a few days is so closely analogous to the cure of scarlet fever that it may well be associated with the development of immunity to the erythrogenic toxin of the streptococci. Some observers have stated that they have been able to blanch the advancing margin of the erysipelas rash with streptococcal antitoxin, others however have failed. Confusion may have arisen in the choice of clinical material for these experiments. The bright red erysipelas simplex—the St. Anthony's fire of the countryside—would most suggest the effect of the erythrogenic toxin. We could interpret

† cf. with a remark of Solly's quoted by Braxton Hicks, (Brit. Med. Jour., 1878, ii., 796). "Whenever a case of surgery in private takes on a highly phlegmonous appearance, I am always sure to find break out in the inmates either erysipelas or scarlatina."

this type of case, which as John Hunter says, "Spreads over a prodigious surface of skin, while it does not affect even the cellular membrane beneath," as due to a widespread superficial spread of infection along the planes of the skin proper and accompanied by a marked local production of the erythrogenic toxin. Does streptococcal antitoxin block the advance of the fiery erythema of such cases? Are such cases Dick-positive at onset and does their reaction become negative coincidently with the disappearance of symptoms? These are questions which as yet have been insufficiently answered, nevertheless their answers might lead to a better understanding of the pathogenesis of erysipelas. We must, however, recognise that there is another clinical condition usually classed under the name of erysipelas, the so-called phlegmonous erysipelas which is a cellulitis of peculiar distribution rather than infection of the skin. In many of such cases the bright scarlatiniform rash is absent, hence it is not necessary to invoke the agency of erythrogenic toxin in explanation. Nor is it a disease likely to be confined to the Dick-positive.

While it has been recognised for several generations that erysipelas is a contagious disease, propagating itself not only as erysipelas but in other septic manifestations, it is very rare indeed to find it propagated with anything like the uniformity of scarlet fever. But there is reason to suppose that on various occasions in the past erysipelas has attained an epidemic "constitution"—to use the old word—in which it could propagate itself virulently and with great consistency. Brereton,[42] of Dublin, in 1826 described an epidemic in which seven cases of facial erysipelas (three in contiguous beds) occurred within four days in one hospital and many other instances of epidemic spread are referred to in Tillmann's [43] well-known work on erysipelas published in 1880.

PUERPERAL FEVER.

In pre-Listerian days puerperal fever, like erysipelas, was a disease of institutions, and the great majority of epidemics which Hirsch records took place in the hospitals, which were often veritably death-traps to the unfortunate women who entered them. The sanitary reform of lying-in hospitals, of which Hirsch himself was so ardent an advocate, appears to have led to a very different distribution of cases, so that in recent years research has found itself seriously handicapped because the disease is met with so rarely in hospitals and the enthusiastic band of workers who have recently in England reopened the attack against the maternal mortality shown in the Registrar-General's Returns have found it difficult to find enough collected cases for their inquiries and study.

All modern bacteriological investigation has confirmed the view that serious puerperal infection is nearly always due to the hæmolytic streptococci and the most recent work has been mainly concerned in tracing the paths by which these bacteria reach the patient. Nor has modern work indicated that we can pick and choose between hæmolytic streptococci with regard to their potency in generating puerperal infection. The parturient uterus, as the older observers surmised, shows itself vulnerable to hæmolytic streptococci from the most diverse sources and of the most diverse types as judged by the laboratory tests now in use. Fortunately we can no longer study the terrible outbreaks of concurrent erysipelas and puerperal fever of which we read in medical writings of the early nineteenth century, admirably collected and studied by Hirsch.[44] It should be remembered too, that apart from cases of erysipelas generating puerperal fever there are many instances on record of the reverse process, in which puerperal fever has appeared to generate erysipelas; instance the now happily almost extinct erysipelas neonatorum of which Trousseau [45] has left us such an excellent account. But it is possible to illustrate the common potentialities of the hæmolytic streptococcus by the work that has been done in study of the sporadic and scattered cases of this scourge of maternity, for bacteriology can be brought into play when the problem is too minute for the coarser methods of epidemiological inquiry. Of this recent work the most interesting results seem to me to have been those in which infection has been traced from person to person by bacteriological methods which one might almost compare with the methods used in the detection of crime. In this work of tracing the individual strain streptococcus in its nefarious career, Taylor and Wright [46] have used as their "marks of identification" the cultural and fermentative peculiarities of the infecting streptococcus, while J. Smith [47] has employed the more delicate criterion of its antigenic make-up. Taylor and Wright and also Smith recognise that infection with the hæmolytic streptococci which are present in the genital canal in 2 or 3 per cent. of normal labours is a negligible factor in the production of puerperal sepsis compared with that of streptococci which reach the uterus after labour. Thus we have bacteriological confirmation of the older epidemiological views of Charles White, Oliver Wendell Holmes, and Semmelweis which have for long been the basis of obstetric practice in the prevention of puerperal sepsis.

Of 13 cases of puerperal fever due to hæmolytic streptococci studied by Smith, all but one appeared from the evidence of agglutination tests to have been derived from a source of infection outside the patient herself. One case, however, he records in which the source of infection obviously arose from a septic focus on the hand of the patient herself. In one case of septic abortion he found that the streptococcus isolated from the uterus was serologically identical with that isolated from the patient's nose. In two of Taylor and Wright's cases the source of infection appeared to be the patient's own throat, though an extrinsic source for the uterine infection was usually found. It seems then that an infection against which the patient is not prepared carries much more risk than self-infection with the streptococcus already present in the patient and with which she has struck some sort of a stable balance. The observations of these modern workers on the minutiæ of epidemic spread are an encouragement to redoubled aseptic precautions at childbirth, because they emphasise the importance of sources of infection, both within and without the patient, which are so trivial in outward appearance as to escape notice.

The connexion between puerperal fever and scarlet fever is by no means so clear as that between puerperal fever and erysipelas, and in the past many contrary opinions have been expressed upon it. As bearing on the interchangeability of puerperal and scarlatinal infection data derived from pre-Listerian records diverge considerably from those of modern sources. Withering, having heard of three successive deaths following scarlet fever in the puerperium, came to the conclusion that "it was particularly fatal to lying-in women," a view later held by Trousseau and more

recently by Caiger,[48] who stated that in his own experience of cases in which the rash appeared within four days of parturition the mortality was over 70 per cent., puerperal septicæmia usually supervening. Braxton Hicks in 1868 stated that in his own practice "about three-fourths of the puerperal fever he saw was somehow mixed up with scarlet fever," and in the Transactions of the Obstetrical Society of 1871[49] he gives an excellent account of his views as to the relationship between the puerperal fevers, recording many cases illustrating my present theme. Andrewes and Gordon[50] in their paper report what they describe as a puzzling series of cases in which a scarlet fever case appeared to generate not only other cases of scarlet fever but also a fatal case of puerperal fever which in turn generated scarlet fever in the nurse who was attending her. On the other hand two such well-known authorities as Goodall[51] and Ker[52] express the opinion that scarlet fever usually runs a mild and typical course in puerperal women. Goodall, however, admits that in many instances of puerperal septicæmia the only traceable source of infection has been cases of scarlet fever, and Ker records one case of a woman dying as the result of both puerperal infection and scarlatina anginosa. It appears then that, although the present mild variety of scarlet fever is not necessarily dangerous to the parturient woman, streptococci derived from scarlet fever may at times produce the severest puerperal fever and that this risk was greater in those days when scarlet fever epidemics were more definitely pyogenic in character.

There seems little doubt that there are two conditions occurring in the puerperium which may be diagnosed as scarlet fever, the one an ordinary scarlet fever due to primary faucial infection, and the other due to primary infection of the uterus itself with a streptococcus of high toxigenic power. The latter merges into other forms of puerperal fever from which it can only be separated by its severity.

Hypothetical Scheme for Streptococcal Diseases.

—	Toxigenicity of strepto-cocci in vivo.	Susceptibility of patient judged by Dick test.	Primary site of infection.
Scarlet fever ..	+ +	+	Throat.
Acute pharyngitis = S.F. sine eruptione	+ +	−	,,
Acute pharyngitis ..	±	+ or −	,,
Puerperal fever and rash = puerperal S.F.	+ +	+	Uterus.
Puerperal fever ..	+ +	−	,,
Puerperal fever ..	±	+ or −	,,
Erysipelas and bright rash	+	+	Skin.
Erysipelas. No bright rash	+	−	,,
	±	+ or −	
Cellulitis and pink lymphatics ..	+	+	Cellular tissue.
Cellulitis; no pink lymphatics ..	+	−	,,
	±	+ or −	
Surgical scarlet fever	+ +	+	Large surfaces; (little invasion, profuse growth).

I have put out in a rough scheme (see Table) what I conceive to be the various clinical, pathological, and immunological entities of streptococcal origin which are met with during the puerperium and I have extended the scheme to cover other streptococcal entities. The first column indicates the presence of erythrogenic toxæmia in the clinical aspect of the disease. The sign ± in this column merely expresses that while there may be some clinical signs suggesting specific toxæmia, this is not in most cases of the disease in question a prominent feature, not enough at any rate to give rise to a definite rash. It will be seen that three immunologically separate conditions are to be considered under the name of puerperal fever quite apart from simple scarlet fever (1) a condition in Dick-positive women in which generalised rash is present and which may be considered as scarlet fever due to infection of the uterus with a highly toxigenic strain; and conditions without rash (2) those in either Dick-negative or positive women where the streptococcus in the uterus is not sufficiently toxigenic to produce rash; and (3) those in Dick-negative women in which, though the toxigenicity of the streptococcus in the uterus is marked, there is sufficient circulatory antitoxin present to prevent the rash and other manifestations of the erythrogenic toxin. In any or all of these conditions septicæmia may occur and dominate the clinical picture.

STREPTOCOCCAL WOUNDS.

It would not be in my province or competence to attempt to describe the protean surgical diseases due to the infection of wounds with hæmolytic streptococci. I have already discussed two special manifestations of wound infection, surgical scarlet fever and erysipelas, but apart from these much material could be quoted in support of a unitarian hypothesis of the causation of streptococcal disease. It was long ago noted by surgeons that a gentle pressure on the course of one of the pink lymphatics which are seen in cases of streptococcal wounds would prevent the proximal spread of the redness and it was recognised that this could not be due to blocking the advance of living bacteria. Some years ago[53] I pointed out that a similar radiation of pink lymphatic vessels spread from the site of an intradermic injection of a sufficient dose of the erythrogenic toxin of a scarlatinal strain and the observation has since been frequently confirmed. It would seem then that the reddening of the lymphatics so characteristic of streptococcal wound infection is produced by the same toxin as produces the rash of scarlet fever. Streptococcal lymphangitis can thus be looked upon as a kind of "miniature" surgical scarlet fever. The toxin removed by the lymphatics presumably reaches the general circulation and probably adds its quantum to the misfortunes of the patient. Not uncommonly a more or less generalised scarlatiniform rash occurs in such cases. Erysipelas may develop at the edges of the wound and septicæmia may follow the inward spread of the infection. Thus even such a simple form of streptococcal disease as an infected wound illustrates streptococcal potentialities that can only be simply explained by the unitarian hypothesis. We lack the immunological data which might help to widen our knowledge of wound infection. I know of no observations correlating the Dick test with the occurrence of "lymphangitis" of the peculiar streptococcal type. John Hunter thought that the condition depended upon the "constitution" of the patient and it may well be that only those develop "pink lymphatics" who are positive to the Dick test. At least in the absence of more precise knowledge

it appears worth while to administer the erythrogenic antitoxin to such patients.

Inadequacy of Theory of Specificity.

The haphazard sequences and relationships which I have selected from an almost unlimited series, old and new, seem to constitute a *reductio ad absurdum* for any specificity view of the hæmolytic streptococci and the common human diseases with which they are related. It is as impossible to separate the several clinical and epidemiological forms of streptococcal disease as it is to distinguish specifically the streptococci found in connexion with them. The attitude of the physician when faced with the actual practical clinical and epidemiological problems of these diseases must largely depend upon the view he takes on this matter, and one or other view he must take as a working hypothesis and as a scheme for holding together the large number of facts which are available on the subject of the hæmolytic streptococci and the diseases associated with them. The unitarian view is consonant with the admitted failure of the bacteriologist to subclassify the group. It is in consonance with the curious sequences of propagation which may be observed in streptococcal disease. It does something to explain the mysterious birth of streptococcal epidemics and the failure of hospital and other forms of isolation to control the incidence of scarlet fever.[54] It permits a description of the hæmolytic streptococci daily met with in disease under one name, and it calls a truce to what Topley and Wilson call the "riot of christening" which has brought so much confusion into the study of this group. In designating a common toxin throughout the group and defining the clinical effects of that toxin it indicates both the value and the limitations of antitoxin treatment and finally it discourages the use of sera the only specific thing about which is their label.

Decline of Streptococcal Infection.

Anyone who has traced the history of the streptococcal diseases from the first adequate records of the eighteenth century to the present day must needs be struck by the gradual decline in severity of epidemics which seems to have begun in the days of Lister and the pioneers of bacteriology and still goes on. In the war of attrition between streptococci and the human race civilised man seems to be gradually emerging as the victor. This is not, I think, because the human race has become less susceptible, nor because any dramatic methods of dealing specifically with streptococcal disease have been forthcoming, but rather because the small obstacles set in the way of epidemic spread have slowly but surely had the hoped-for effect, possibly by placing some control on the passage and exaltation of the infecting agent. The individual source of infection in streptococcal disease only too often eludes us and is likely to continue to do so, but we no longer expect to see the terrifying fatality of puerperal fever, wound infection, erysipelas, and malignant scarlet fever which was familiar in by-gone days. Some "accessible link"—to use Topley's expression—in the propagation of streptococcal disease seems to have been reached if only by our ill-guided gropings. For fifty years this country has been nearly free from the dreaded scarlet fever which a century ago decimated townships and exterminated families.[55] Fifty years is a long interval in an epidemic periodicity and we may reasonably hope that the old type of epidemic has disappeared never to return, a consummation perhaps of all the hygienic measures, separately inconsiderable, that have gone to make up modern preventive medicine.

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NORTH MIDDLESEX COUNTY HOSPITAL.—In his report of the work of this hospital for the nine months ended Dec. 31st, 1930, Lieut.-Colonel Spencer Mort, the medical superintendent, states that the total admissions, including 862 births, were 8216. There were 22,650 out-patients not including pensioners. The number of deaths was 1077, but more than 10 per cent. of these patients died within 48 hours of admission and 53 per cent. were over 60 years of age. "The death-rate, therefore, conveys no exact expression of the utility of the hospital as a whole," Colonel Mort says, "but presents partly the conclusion of cases from other hospitals, whose statistics benefit at our expense." The mental wards are condemned as unsuitable.

NATURE OF THE ACTION OF RADIUM AND X RAYS UPON MALIGNANT GROWTHS.

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IN the course of the development of radiotherapy (radium and X rays) opinions have from time to time been advanced as to the nature of the *action* which the rays have upon malignant growths. Suppose, for the purpose of the argument, that the *effect* is the disappearance of these growths, then the question is, what action or series of actions is set up by the radiation which leads to this?

In the first instance opinion naturally inclined to the view that the rays had a direct effect upon the malignant cells, and that this action was in itself quite enough to account for their disappearance. Experimentally it is not a difficult matter to show that X rays or gamma rays in doses such as are commonly used clinically have a direct action upon malignant cells; this is most easily shown by excising animal tumours, exposing the tissue to measured doses of the rays, and then implanting small pieces of it into susceptible animals. The effect of big doses is to prevent the growth of the implantations, and doses smaller than this give rise to a delayed onset or diminished rate of growth, so that a whole range of direct effects is apparent by merely varying the dose of radiation. For a long time, therefore, attention was focused upon what kind of direct action would most probably be induced by the rays, and in consequence a number of suggestions arose about what parts of the cell were most sensitive to radiation. First one chemical component of the cell was suggested, then another, but it cannot be said that the attempt to attribute the change to any particular chemical substance has met with any success or had any constructive value in helping us to visualise the essentials of the processes initiated by radiation.

While these ideas were being developed it was suggested that perhaps after all the action of radiation upon malignant growths might be an indirect one, and that it was not so much what the rays did to the malignant cells as what they did to the normal contiguous structures and to the organism as a whole that brought about the end-result. There was a certain amount of clinical and experimental support for these views, for patients had been given moderate, in fact quite small doses of X rays, certainly not lethal ones, over prolonged periods and had gained benefit from them. There were few records of what might be called disastrous results with this form of treatment. Soon after the adoption of the Erlangen method of giving large doses at a single sitting to patients suffering from malignant disease, there was evidence that these doses could not be given with impunity, and in many cases caused fatal results. From the experimental side there is abundant evidence that heavy doses of X rays or gamma rays are very damaging to the normal tissues and cells of the animal body, but an extraordinary range of vulnerability exists among the tissues, some being very sensitive, others very resistant. On the other hand, experimental evidence has been brought forward to show that small doses of X rays judiciously given appear to help the organism to combat the growth of cancer. For instance, if a small region of the rat's body be X rayed, and the animal is afterwards inoculated with sarcoma cells, these cells proliferate more freely in the non-rayed than in the X rayed tissues; again, if the whole rat be given repeated small doses of X rays and sarcoma cells are then implanted they do not grow as rapidly as in the normal untreated animals.

Altogether the evidence seems to show that the action of these rays is partly a direct one and partly an indirect one, and it remains to discuss the nature of these two actions.

Theories of Direct Action.

One of the most significant clinical facts in connexion with radiotherapy is that the effect of a given dose of radiation upon a malignant growth depends upon the time interval over which the dose is spread. This is perhaps shown most strikingly in radium therapy in the treatment of primary growths of the tongue. When these localised growths were treated years ago by the insertion of a few radium tubes of a high intensity for a relatively short time the results were bad. Now, by the use of a larger number of low intensity needles, and prolonging the exposures for seven to ten days, the results are good—so good in fact that, at many clinics, experienced radium therapists will express little doubt about being able to treat a primary lesion in the tongue successfully. It should be borne in mind here that some of the improvement in the results is due to a more even distribution of the radiation. Again, an example may be quoted in the case of X rays. It is probably true to say that the method of Coutard, at the Radium Institute in Paris, of treating malignant glands in the neck by means of repeated small doses of X rays prolonged over a period of several weeks, is better, judging from the results, than the method of administering large doses to such regions in a comparatively short time.

It would be quite unwarranted, from two such groups of cases, to jump to the conclusion that the whole of the practice of radiotherapy has to be recast on the lines of small intensities and long times of exposure, for some of the work at the Memorial Hospital, New York, shows the possibilities of treatment with high concentrations of radium for relatively very short times. But the two cases which have been cited do lead us to look afresh at the position and to inquire what particular actions set up by the radiation are responsible for the wide clinical differences noted.

If time makes all this difference, it is possible that the life-cycle of the cell is operating in some way to account for these differences. Quite early in experimental studies it was found that some types of cells were more sensitive to radiation in the dividing stage than in the growth stage. Studies of this kind have been continued intermittently and developed notably by Spear and Love at the Strangeways Laboratories. This later work has shown that not only are there stages in cell life which do differ enormously in their sensitiveness towards a dose of radiation, but that the premitotic stage is a particularly sensitive phase in its life, and the inhibitory action of radiation upon growth can perhaps to a large extent be interpreted as being due to the prevention of the cell entering the mitotic phase.

Given these facts in a general way, are we entitled to go further and say that they provide a rational

explanation of differences in clinical results with long and short times of exposure? I think it must be admitted that while it is quite possible to invoke this aspect of cell activity as a rational explanation of what is happening, there are other important possibilities. For this reason it may be well if we recognise that while these studies on the particular modes of activity in the cell are fundamental in character, they are not necessarily, though they may be, the key to the position as regards cell reactions to radiation.

A few words may be said about other ways in which these clinical differences can be visualised. A living cell represents a vast complex which is somehow in equilibrium, and the various equilibria are maintained in spite of an extraordinary number of factors which are always tending to upset them in one way or another. These equilibria differ from the equilibria considered in physics, because they are capable of adjustment over such a very wide range of action. The whole organisation of the cell, being normally adapted to the processes of repair, growth, multiplication, and so on, can cope with forces whose actions on many inert media quickly upset the normal conditions of equilibrium, but in the case of the cell they do not do so unless certain limits are reached. For instance, practically any normal organ of the body can stand some dose of X rays without giving any recognisable reaction, no skin reaction, no epilation, no blistering, no sterilisation, &c., and this in itself argues that the processes set up in the cell by radiation can be supported within certain limits. Now without doubt, when X rays and gamma rays are absorbed by the tissues, the initial process is the liberation of electrons in situ and the main effect produced by these electrons, when they in turn are absorbed by the immediate tissues, is to produce the condition known as ionisation; but it should be recognised that this ionisation is only likely to be important when it happens to certain classes of chemical bodies. The ordinary electrolytes of the body will not be affected; colloids, yes, if positively charged, not if negatively charged, and although some processes of oxidation may be initiated, those of reduction appear to be almost as likely, according to recent work by Colwell.*

There is, however, one class of bodies playing an important part in cell processes—namely, intracellular enzymes—which appear to be influenced by radiation to an extent which must be taken into account here. It may prove to be a significant fact that the curves illustrating the rate of destruction by radiation of certain simple forms of vegetable and animal cells, and of enzymes, are so similar in their general characteristics. It may, of course, be found that this is only a similarity with no causative link between them. Enzymes play an important rôle in cell life, and one aspect of their activity is shown in recent work by Chambers and Scott. If, for instance, an implanted tumour of J.R.S. be removed from a rat, minced up and incubated with saline for various periods of time, a cellular extract from it seems endowed with two properties when used. If the period of incubation is long, and this extract is injected into rats, the animals are made more sensitive to inoculations of tumour cells; if the period of incubation is short, say less than two hours, the extract has the property of making rats immune to a certain extent.

The bearing of such observations on the subject of this paper may now be discussed. The whole question of immunity towards implantations of cancer in animals is a very big one and a very much disputed one, yet there are many who will agree that if you can protect an animal against an inoculation of cancer cells towards which it is normally susceptible, you have gone some way in a therapeutic problem. Now if irradiation of a tumour is followed by its disappearance, and if in the act of disappearance (autolysis or disintegration) substances may be formed which have the potentiality of either making the organism more susceptible or, on the other hand, making it immune to tumour growth, then it might be inferred that the disappearance of tumours in the body may either be followed by conditions of increased susceptibility or immunity in the body of the host. Experimentally the condition of necrosis is one in which cellular extracts can be obtained which produce conditions of increased susceptibility to tumour growth; and necrosis of the tissues is one of the danger signals in radiotherapy. It may be too early to apply this principle in therapeutics, but it may well be that some of these obscure kinds of reaction going on in the body have more to do with the essential actions of radiation than can yet positively be claimed for them.

Theories of Indirect Action.

Any effects of radiation upon the body other than the direct effect on the malignant cells are included in the term indirect action. It may be useful to divide the subject into three sections: (1) normal structures, contiguous to the malignant growth; (2) the circulatory system; and (3) the portions of the body remote from the growth. Dominici was perhaps the first to point out the importance of the part played by the normal cells in the vicinity of a malignant growth after gamma irradiation. He was able to show that in the course of several days after a dose of radiation there was an accumulation of plasma cells and lymphocytes in the stroma, and that these invading cells had a great deal to do with the subsequent disappearance of the growth. Experimental studies in immune and irradiated rats support the view that local cellular processes play a sane part in deciding the trend of events, though the immune condition is general.

With regard to the circulatory system, an enormous amount of work has been done showing the effects of X and gamma rays upon the blood stream in man and in a large variety of animals. This action has been shown to be largely a destructive one, although not entirely so. Large doses to the body cause a diminution in most of the cells, especially the lymphocytes, extending indeed to a destructive action upon the marrow which, if great enough, leads to death. This so-called destructive action of the radiation upon the blood does not necessarily mean that when cells are withdrawn from the circulation they are destroyed; in some cases no doubt they are, but it is an experimental fact that when the lymphocytes are withdrawn from the circulation of a rat by exposure to a small dose of X rays they return to their original numbers in a very short time. As this process can quickly be repeated, it is perhaps more rational to conclude that it is not a case of destruction but of temporary withdrawal from the circulation. The effect of repeated small doses of radiation upon the body has not been systematically carried out in man, and only to a limited extent in animals; but as far as the experiments go they show that the number of white cells in the circulation can be substantially increased. The effect of X rays and gamma rays on the capillaries should be

* Received for publication.—ED. L.

mentioned—the treatment of capillary nævi proceeds on the lines of repeated small doses, the ultimate effect being the obliteration of the capillaries.

For our purpose here we may, in the circulatory system, include the function of the blood stream in dealing with bacterial infections. It is the usual practice in the radiological treatment of infected growths to attempt to clear up the infection as far as possible before any irradiation is carried out, otherwise there may be a flare up and rapid death from sepsis. Experimentally it has been shown that heavy doses of X rays to an animal can markedly lower its resistance to bacteria. If, for instance, the abdomen of a cat be given a heavy dose of X rays, all the rest of the animal being protected from the rays, death may ensue in a week with an acute infection of the lungs. It is unthinkable that the function of the blood stream is not of prime importance in the reaction of many malignant growths towards big doses of X rays or gamma rays.

Finally, the indirect action of radiation upon malignant growths must include the action the rays have upon the general physiological functions of the body. Here is a field practically unworked over by physiologists. We are, without doubt, more ignorant of the general physiological effects of X rays and gamma rays than we are of their immediate effects upon cell life, whether malignant or otherwise. It is an encouraging sign that physiologists are now including radiation as an instrument for their use, which may prove not only of direct benefit in purely physiological studies, but which will in turn yield results having an important bearing on radiotherapy.

Conclusion.

The foregoing remarks inevitably bring with them the question as to whether there is any method by which we can indicate which of the many actions produced by the rays are really the most significant. While all these actions are extremely interesting subjects of study, it is a vital matter to know which of them are of primary and which of secondary importance.

One method of approach to the question is to try to correlate the various effects with the doses of radiation which produce them. How wide a range of dose-effect exists, even among the few examples mentioned, may be seen as follows: If we call L the lethal dose—i.e., the dose of X rays or gamma rays which if given to a layer of tumour cells just prevents their growth—then one-tenth of this dose causes an easily recognised reduction in the number of cells in mitosis. Now turn to the action of X rays on colloids; Crowther has shown that the positive colloids may be precipitated by X rays, but the doses required to do this are relatively enormous, about 20 L. Another contrast could be provided by the following: A dose of X rays equal to L/10 would be quite enough if given to a rat to rid the blood stream of more than 90 per cent. of its lymphocytes, yet 20 times this dose could be given without being able to convert 1 per cent. of sugar into dextrin.

If we attempt to evaluate the various actions of these radiations, bearing in mind their order of appearance in the scale of quantity—how some of the vital functions of living tissues are put out of action by a quantity of radiation which has but a trifling action upon their other processes—perhaps the most important classes of action are:—

(1) Those which interfere with or disorganise the delicate processes involved in the division and maturing of cells.

(2) Those which determine the release into the tissues and into the circulation of the products of cells, normal as well as malignant, whose destruction is caused by the rays.

(3) Those which produce changes not only in the content and production of the blood, but also in its power of dealing with infection.

A CASE OF PSEUDO-MIRROR-WRITING

AND SOME OBSERVATIONS.

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The exceptional interest of this case, and the fact that we can find no recorded parallel, has encouraged us to give a detailed account of our investigations. That the understanding of abnormalities of writing and drawing has progressed so slowly may perhaps be ascribed to the fact that similar cases have, in the past, been inadequately recorded.

The patient was a domestic servant, 28 years old. She had been admitted at the age of four to the children's home of a workhouse. There she had remained until 14 years of age, when she left to live with a relative. Soon after this (about 1918) she entered the Royal Devon and Exeter Hospital for the treatment of chorea. On July 12th, 1923, she was admitted to the Devon Mental Hospital suffering from "choreiform twitching movements," and was classified as a congenital mental defective. There were no fits, nor did she then show any peculiarity of writing. She was discharged on Sept. 2nd, 1924, and went into service. After a while, however, she had to leave the situation because "shakiness of her hands" caused her to drop trays, teacups, &c.

About four weeks after her discharge, while staying with a friend, she was "taken ill" and she remembered nothing more until she woke up next morning to find herself in bed in her friend's house. This illness seems to have been in the nature of a "fit." She was admitted on Feb. 26th, 1926, to a local infirmary in such condition that—to quote her own words—"she couldn't think, speak, or write, but she could hear what people said to her." Her memory was also defective. She "tried hard to speak, but couldn't get any words out"; a little later, she wrote her wants on a slate, but at first the nurses failed to understand her writing. This seems to be the time when the pseudo-mirror-writing took its origin. It was not long, however, before the nurses tumbled to the meaning. During her stay here, her speech would return at intervals, but never for more than a few days or so at a time. Four months before she left she had a "shock," which brought her speech back and, in her own words, "it never left her again."

In May, 1930, the guardians sent her to an epileptic colony, from whence she went back to an infirmary. Whilst there it is reported that "she attempted to throw herself out of the window and to strangle herself; she wandered about at night (she substan-

tiates this by saying, 'Us used to walk in our sleep, so the nurse said, but us didn't know about it'), and she thought the nurses and people were talking against her and that she had seen strange faces in the ward." It was in consequence of this that she was readmitted to the Devon Mental Hospital on Sept. 9th, 1931.

Since her readmission she has been well-behaved and, under careful supervision, has made herself useful in the ward. The "choreiform twitching movements" are no longer observable, but she has suffered from occasional epileptiform fits in which she bites her lips but not her tongue. She has no "aura," nor has she any recollection of her fits, as she is confused for some time afterwards. She does not injure herself in falling, nor does she lose control of her sphincters. The sister of the ward reports that the fits are very violent. A bromide mixture was prescribed, and she has had no fits since Oct. 30th.

She is periodically depressed, easily upset, and quickly "pulls a long face"; indeed, the rapidity of her emotional changes remind one of the disseminated sclerotic or of the encephalitic; but between-times she takes an interest in things generally and is cheerful enough when talking to the doctors and nurses. Though her speech has a tendency to sluggishness, and she refers to herself as "us" (an expression common to the Devon dialect), there is now no evidence of any speech difficulty, and she answers questions quite readily and rationally.

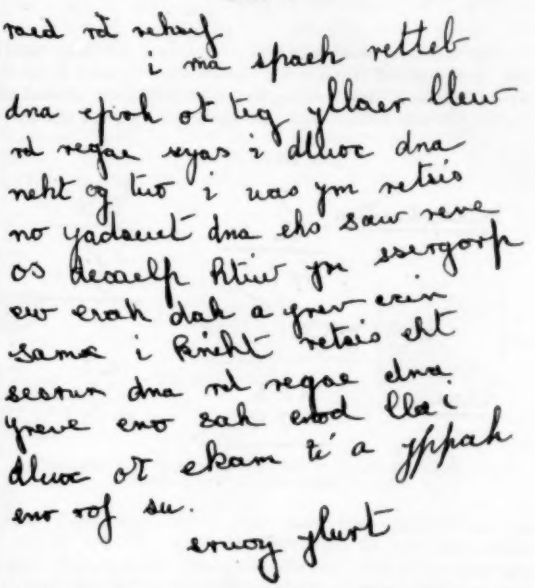
The measurement of any adult's intelligence bristles with difficulties. Nevertheless, we thought that by putting to her a modified series of Binet-Simon tests (adapted for children up to 16 years), a rough estimate of her intelligence might be formed. She came through the final 16-year examination with flying colours, except for the arithmetical reasoning tests (which are in the 14-year examination); these were very poorly performed. Memory and comprehension tests were very good. Information gained from these intelligence tests, in conjunction with observations on more general lines, indicate that she has an intelligence quotient between 70 and 80 or possibly even between 80 and 90. Classified thus, she would be regarded as a dull or "backward" case. Her backwardness is doubtless chiefly due to her lack of maternal care and poor educational facilities. She "prefers girls' school stories" to the newspapers, which she does not read.

Physical examination revealed no definite abnormality. Her general health is satisfactory, save that she was pale and obviously anæmic on admission; she has since gained 10 lb. in weight. Her pupils are large, and react well to light and on accommodation. She has always worn glasses, and Dr. G. P. Hawker, the consulting ophthalmic surgeon to the Devon Mental Hospital, who saw her before her discharge in 1924, prescribed lenses to correct a −3·5 astigmatism. He has again examined her since her re-admission, and confirms that these are still what she needs. Her deep reflexes are brisk; her knee-jerk gives a sustained reaction of the choreic type. Tests for asynergia reveal a marked incoördination with the finger-nose test, particularly when she performed it with the right hand. When, however, she opened her eyes she was able to perform the test without error. She complains of "an irritating tickling" in the ears, giddiness in which the world starts swimming round so that she has to sit down, and of headaches, "right on top of the head, first stabbing, then dull."

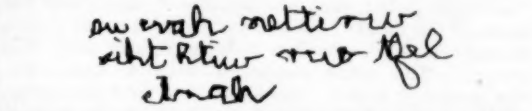
READING, WRITING, AND DRAWING.

The real interest of this case revolves round her unusual manner of reading, writing, and drawing. She writes each word backwards, starting on the customary side of the paper—i.e., to the left—and using her right hand (Fig. 1). Each letter symbol, however, is correctly orientated. With her left

FIG. 1.



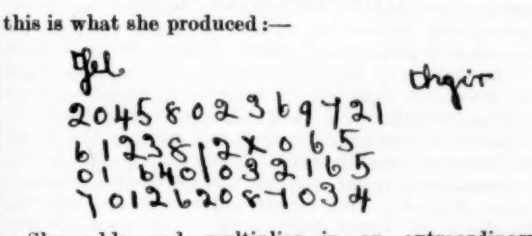
hand she writes in exactly the same manner, though with less facility, thus:—



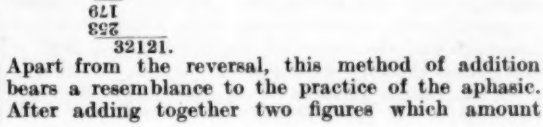
She informs us that she has never been left-handed. Her sister writes normally. The presence or absence of the patient's spectacles does not affect the issue. Her figures are correctly orientated, but, when she is asked to copy a row of numbers she will write them backwards, starting, as for the writing of words, on the correct side of the paper. When asked to copy the following figures,

Left												Right
1	2	7	9	6	3	2	0	8	5	4	0	2
	5	6	0	X	2	1	8	3	2	1	6	
5	6	1	2	3	0	1	0	4	6	1	0	
4	3	0	7	8	0	2	6	2	1	0	7	

this is what she produced:—



She adds and multiplies in an extraordinary manner (Fig. 2). Thus when requested to add together 253 she turned the paper round and wrote

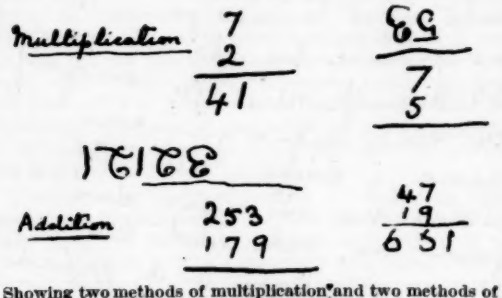


Apart from the reversal, this method of addition bears a resemblance to the practice of the aphasic. After adding together two figures which amount

to more than ten, it is a common fault with all forms of disordered speech to write down the total sum instead of carrying over one to the next column (Head, vol. ii., p. 333). Thus 864
256
10120

She cannot read ordinary dextrad writing until she has turned it round ("clockwise") and held it upside down. On testing her with different modes of writing it was found that she quite easily read pseudo-

FIG. 2.



Showing two methods of multiplication and two methods of addition employed by the patient.

mirror-writing, but that she could not read true mirror-writing or inverted writing. When it was pointed out to her that she read and wrote in a strange manner, she insisted stubbornly that: "It is right," or "Us writes proper, don't us." Upon being shown a calendar on the wall she said that the figures were "all right," but that she could not make out the name of the month. When we reversed it the month became intelligible to her, but the figures were "all wrong." The same happened with a time-table. She turned it round "clockwise" to find the names of the stations, but could not then read the time of arrival of the trains. In church she holds her prayer-book upside-down. It has also been observed that when this patient has been tidying up the sister's room, the vases and photos have been put back upon the mantelshelf upside-down, and the pictures and calendars reversed upon the walls.

This devotion to object-reversal manifests itself in her drawings. In sketching objects from nature, such as a man, a dog, a flower pot (Fig. 3), she draws upside-down when the paper is laid flat before her on the table, but when the paper lies vertical, in front of and parallel with the object, she draws normally. When copying a drawn object that has some definite meaning to her or representing an object with which she is familiar, she will reverse the drawing before attempting to sketch. Then, of course, while the object will actually be upside down, she will draw it the right way up. If, however, what she is asked to copy is a diagram or something which conveys nothing to her so far as orientation is concerned, for instance, a triangle, she does not reverse the paper but copies it upside-down. Colour is affected in the reversal both in the vertical and horizontal relationships (Fig. 4). Her colour appreciation is normal, for she gives correct answers to colour tests. When a sea-painting was shown her, and she was asked which side the lighthouse was, she turned the picture on its head and then said, "On the right." Actually the lighthouse was to her left. Further, when asked to point to the funnels of the ship, which were now upside-down, she indicated a corresponding part of the sea on the top of the picture.

Upon being questioned as to which was the examiner's left hand and her left hand, she made correct answers ("she knew it was her left because she wrote with her other hand"), but when told to look in a mirror and then say which was her left, she invariably mistook her right for her left.

Additional tests were devised to investigate more thoroughly her sense of "spatial appreciation." Two pens, one red, the other yellow, were held one above the other against the wall at a little distance from her. The red pen was above the yellow one, and the question put to her was, "Which colour is on top?" Her answer was: "Yellow." Then the same two pens were held side by side and she was asked which pen was to the left, and she answered that the red was on the left. Actually, the red pen was to the right of the yellow one.

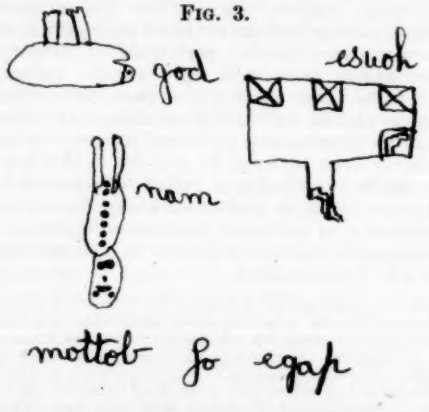
More enlightening were the following tests. The pens were held against the wall cross-wise, the yellow pen a foot in front of the red one. To the inquiry, "Which pen was nearest to her?" she replied: "The red one." Then she was told to feel and see. When she had felt for herself and her mistake was in this way brought home to her she looked bewildered and exclaimed: "Why! the yellow one is nearest!"

A still further test showed the faulty spatial appreciation even more strikingly. One of the pens was held a few feet before her eyes and she was asked, "Was the nib upwards towards the ceiling or downwards towards the floor?" Actually the nib pointed to the floor. Her reply was that the nib pointed upwards, and when she was asked to touch it, expecting to feel the point and encountering only the blunt end, she looked flabbergasted. This test was performed several times, and it was then discovered that she was not in error uniformly but only occasionally. She was asked whether she really saw the pen with the nib pointing to the ceiling, and she said that it had seemed so until she had felt for herself and realised her mistake.

The last two tests are to our mind specially significant in the analysis of her case, showing as they do the discrepancy between her visual and tactile senses.

Her method of spelling is interesting. When requested to spell policeman, she spelt N-A-M-E-C-I-L-O-P; for handkerchief she said F-E-I-H-C-R-E-K-N-E-H; and for California, A-I-N-R-O-F-I-L-A-C—all said quite rapidly, very nearly as quickly as one could spell them forwards. When asked what "Devon" spelt she

FIG. 3.



said, after thinking, "I don't know, sir." Asked what N-O-V-E-D spelt, she said "Devon" at once. Similarly, when asked what Exminster spelt, she looked blank, but when asked "What does R-E-T-S-N-I-M-X-E spell?" (spelling it quite quickly) she said at once—"Exminster."

She repeated the alphabet from A to Z in the ordinary manner, though not without making several mistakes in the arrangement of the letters. On being handed cardboard squares corresponding to the letters of the alphabet to arrange in their proper order, this is what she produced:—

Z X Y J W V Q O P S T M N L R U G F K I H E D C B A

When asked to reproduce this effort in writing she

formed the corresponding letters in their correct orientation: A, B, C, D . . . &c.

MIRROR-WRITING AND SIMILAR ABNORMALITIES.

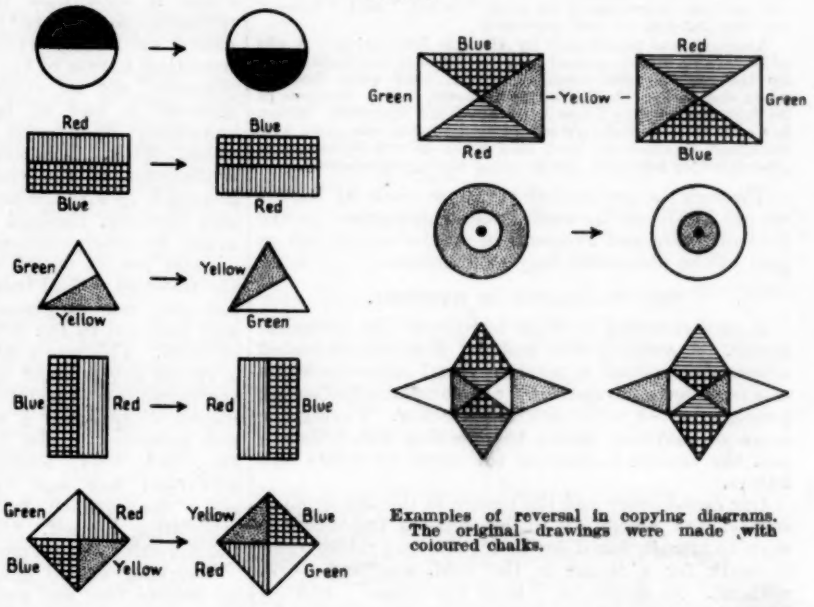
Three salient points emerge: Firstly, that the writing is not true mirror-writing; it is backward writing, with the letters correctly orientated, and written with the right hand in dextrad fashion, from left to right of the paper. This pseudo-mirror-writing, as we have christened it, is unintelligible when reflected in a mirror, save for an isolated word here and there. Secondly, it is associated with upside-down reading and drawing and backward spelling. Thirdly, the pseudo-mirror-writing—and doubtless the associated phenomena—began after the "illness" recorded in the case-history, and that, also about that time, the "choreiform twitching movements" departed and were replaced by frank "fits."

We make no apology for the term pseudo-mirror-writing, although it is in the strict sense an inexactitude, because at first sight the script does indeed suggest mirror-writing, and because the affinity of title does bring out, upon examination, certain common relationships between two distinct phenomena. For the benefit of those who have not made a special study of mirror-writing ("Spiegelschrift"), it would be well to explain that the designation is generally applied to that form of writing which is executed from right to left, with the letters reversed and so arranged that when reflected in a mirror they look like ordinary writing. It is worthy of note that a large number of observers have associated mirror-writing with left-handedness and "eyedness" (Brennan).

Most commonly true mirror-writing is executed with the left hand, either because there is a natural left-handedness (Blom believes that mirror-writing is as normal for left-handed people as conventional writing is for the right-handed) or because some disability of the right hand tends to it. The majority of cases of mirror-writing so far recorded have been observed to follow right-sided hemiplegia. In such cases we can most happily apply the motor hypothesis of Erlenmeyer or other hypotheses based primarily upon bilateral representation in the cerebral cortices. Whilst most common in cases of hemiplegia, true mirror-writing has been observed in a variety of nervous disorders ranging from locomotor ataxia to hysteria. It has occurred under hypnosis and in cases of automatism. Sundry instances of idiots and imbeciles so affected have been recorded. Women are more subject to the condition than men, and it is said to be easily acquired by highly nervous people. Downey states that sometimes the tendency towards mirror-writing remains latent, as it were, far into adult life, only to manifest itself during states of exceptional fatigue; and it seems that this might reasonably include "psychic shock," which, from the history, seems to appertain to our case.

Sweeney, Hale and Kuh, and Pendred have advanced visual hypotheses to explain mirror-writing, and we think that a similar hypothesis, suitably modified, offers the best explanation of the phenomena noted in our case. We know that objects of the outside world are projected upon the retina as an inverted image, which remains inverted in the visual cortex. Putnam showed that the upper and lower halves of the retina are represented respectively in the upper and lower lips of the calcarine fissure. The re-inversion of the image and its correct interpretation, probably a function of the visuo-psychic centre, is a "learned process" which, according to the evidence that has accumulated, is rapid and takes place very early in life before the child is able to tell others of its difficulties. Tactile and kinæsthetic impressions associate themselves with the visual impressions in this process of learning.

FIG. 4.



Examples of reversal in copying diagrams. The original drawings were made with coloured chalks.

Stern draws attention to inverted drawings of children, and indicates that the very young child is able to recognise a picture upside-down as readily as one right side up. With growth, this ability disappears. Pearson has reported two interesting cases of inverted drawings in children, for which he advances a visual hypothesis. Stratton's well-known experiment showed that erect vision was just a matter of integrating visual data with other sense data and with bodily movement.

The visual theory that is applied to cases of true mirror-writing supposes that vertical relationships are the easiest to rectify, but that there is confusion in the horizontal plane. Thus in the mirror-writer there would be a defective psychological adjustment of the inverted brain image in the lateral plane, whereas vertical relationships would be normally corrected. Orton goes further and suggests that the visual image impinging upon one occipital lobe is the mirrored opposite of the image in the other hemisphere. In the normal subject one of these images becomes suppressed while the other, belonging to the dominant hemisphere, persists. It is suggested that in the mirror-writer supremacy of one hemisphere does not occur, hence there results a constant state

of doubt as to the correct orientation of objects or of words. Since, in our case, vertical relationships too are confused, it is clear that cerebral dominance can play no part in its ætiology.

The patient's eyesight disability may be of significance. Gray has shown us how faulty eye movements can affect reading, and references in literature to cases of inverted and downward writing disclose a remarkable frequency of defects in the visual apparatus.

Sweeney records a case of a girl of 13 years, of normal intellectual calibre, whose only physical defect was a hypermetropic astigmatism. When wearing suitable glasses her writing was normal, but without them she wrote upside-down and backwards. She drew pictures reversed, and was wont to hold common articles such as pencils upside-down. Like our patient, when asked to spell "carpet" and "house," she said T-E-P-R-A-C and E-S-U-O-H.

Another case mentioned by Hotz is interesting. A girl of 10 became unable to read as the result of taking belladonna by the mouth. She could, however, read quite fluently when she turned the book upside-down. At a distance of 20 feet the Snellen's test-type appeared inverted. When her eyes were completely atropinised (unlike our case, who remained unaffected), and also when a +2·50 lens was placed before her eyes, the inverted vision disappeared.

Through the personal observations made by Bayers we are aware of the occurrence of distortions in the field of vision and reversals in spatial orientation as part of the phenomenology of migraine.

THE POSSIBILITY OF HYSTERIA.

A case recorded by Pick introduces the hysterical factor. A woman who suffered from disseminated sclerosis developed a peculiar visual anomaly which was regarded as hysterical. She complained of seeing people inverted with their heads below. During the stage of inverted vision her reading was affected, and she tended to reverse the order of words and letters.

Our case-history and the nature of the fits strongly suggest the possibility of hysteria—a subconscious wish to remain cared for in institutions rather than to work for a living in the cold, exacting world without. A desire to "hold the stage" and to excite wonder and comment might conceivably be at the bottom of the phenomena. It is a theory that must be accorded respect.

On going into the case-history more thoroughly and collecting information from the patient's married sister and the staff of the infirmary where she was, when the writing peculiarity first manifested itself in 1926, the nature of the "shock" which restored her speech was discovered. It was the witnessing of the precipitate birth of a child in the bathroom of her ward. The sister of that particular ward described the patient as seeming to be always "afraid to be left alone" and "afraid of the dark"; and further added that "she was in the habit of getting into bed the wrong way round"—that is to say, with her head under the clothes at the foot of the bed and her feet where her head ought to be.

She has been watched carefully over a sufficiently long period now, and the consistency of her actions and habits of life seem to negative any possibility of malingering.

With a little practice one of us found that he could read quite well from a newspaper or book held upside-down. It was also discovered that her backward writing could be imitated with fair speed and accuracy. What could not be achieved was to spell as she does. The weak-minded, as we are aware, are often surprisingly talented in certain directions, but even so it would require considerable practice—and an order of intelligence above and beyond what we believe her to possess—to acquire the art of spelling backwards long and difficult words, quickly and correctly, in the relatively short time that elapsed between her discharge from this hospital in 1924 and her admission to the infirmary 18 months later.

Pick's work on "Contrary Actions," referring to cases of speech reversal, has suggested that the writing and reading might conceivably be pseudo-deliberate, coupled with a certain amount of negativism. But the patient is not a schizophrenic, nor does she show any signs, so far as we can discover, of schizoid trends or tendencies. She is willing and coöperative rather than negativistic.

The word hysteria is such an indefinite and unsatisfactory entity—everything we do not understand is shot into that psychological ashpit of medicine—and rather than be accused of this unoriginality we would, while recognising the essentially hysterical nature of the case, like to be a little more profound, and we would venture to submit that the disorder is one of faulty spatial discrimination, consequent upon some psychical disturbance in the visual cortex. It is conceivable that if there is some dysfunction of the visual cortex—or of the paths linking it up with the motor centres—reading, writing, and drawing, through faulty perceptual processes, might be misrepresented.

Cases are on record where the ability to reinvert the inverted retinal image has been temporarily lost following cerebral disease or injury. A case in point was recorded to Dr. Schweinitz by Dr. Albert Seitz, of Tenn. This was a 20-year-old youth, who suffered a rather severe head injury and for several weeks thereafter saw everything upside-down. This phenomenon disappeared a month later. A similar case was published in the *New York Medical Journal* of Dec. 18th, 1904. Following an attack of measles an 8-year-old boy saw everything upside-down, and as a consequence had considerable difficulty in orientating himself. On closing his eyes, however, the difficulty disappeared.

Weighing up all the circumstances of the case, we believe that our patient is reading, writing, and drawing "primitively"—in other words, she tends to portray an object as she sees it rather than as training would cause her to perceive it. Our view is that the "fit" which occurred after leaving service was the psychic shock that effected the loss of speech and caused the "learned processes," demanding the effectual coördination of important centres, to revert to a childish type, and that the subsequent "shock" whilst in the infirmary was sufficient to restore the former but not the latter.

Head's work on the organic aphasias (which might reasonably be expected, in no small measure, to apply to those of an hysterical nature also) is instructive. Anything which disturbs the free use of language will tend to affect the power of reading and writing to a profound degree. "Articulate speech, the oldest acquisition, racially and individually, exhibits the most specific and particular changes, whilst the recently developed powers of reading and writing are more massively and indifferently affected." Head concludes that in disorders in the use of language there is interference with the use of language *as a whole* and, though certain aspects of it may be disturbed more than others, the defects of speech cannot be expressed in simple terms of audition, articulation, vision, and writing. In other words, there is a dissociation of the highest forms of expression of thought—i.e., of symbolic thinking and expression. We learn from a study of his work that if vigilance is lowered, as it may be by structural injury, by disease,

by drug intoxication, by fatigue, or by psychic shock, the more highly integrated responses may be thrown out of action and historically simple forms may reappear. The general effect of a specific language disturbance is to throw the patient back upon earlier acquired and relatively less complex modes of dealing with the problems that face him, and to limit him to a primitive mode of response.

It seems to us, therefore, that "seeing things upside-down" might fairly be regarded as a more primitive mode of visual response. Our patient readily admits that her sense of sight plays her false when "checked-up" with her sense of touch.

The psychic disturbance, we believe, is causing her to see objects of the outside world just as they are cast upon the retina unless checked by her intelligence—in other words, unless corrected by reasoning and common-sense.

The fact that her speech is now normal, while the associated manifestations of reading, writing, and drawing remain perverted, may be explained by the universal law that functions which are the latest, genetically, to develop are the last to recover, seeing that we know that "Each human being learns to speak and to understand what is said to him during his earliest years; the arts of reading and writing, on the other hand, become possible only after he has already expressed himself fluently in words" (Head).

It is notable that our patient does not make mistakes concerning objects that she knows must be "so-and-so" way up. Thus although she may draw—with the paper flat—a person or animal upside down, she interprets them in their natural orientation—i.e., the head on top and the feet below. It is only with reference to objects upon which she can bring to bear no intellectual appreciation that she makes serious errors—e.g., when a pen is held in the air with nib upward no lesson learnt in life, no amount of intelligence, can tell her whether the nib is really pointing upwards or downwards if her vision is playing her tricks, though when asked whether our heads or our feet are on the ground her experience tells her that it must be the feet.

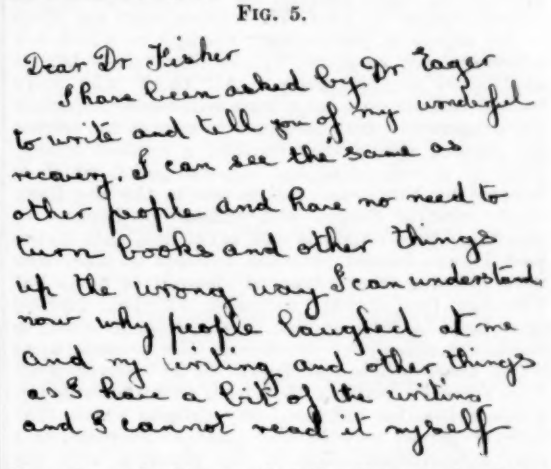
The question whether the loss of speech was a simple hysterical mutism or in the nature of an aphasia seems to resolve itself in favour of the former—with the added explanations and suggestions that we have offered. In contradistinction to our case, who has made a complete recovery from her mutism, Head states quite definitely that in all cases of aphasia that have shown any progress at all, recovery was incomplete and the characteristic disorder was still present to a minor degree. His observation that his non-traumatic cases of aphasia all "progressed" more or less steadily is not without interest for comparison purposes. Our patient shows no want of comprehension of the significance of words or other symbols, as is the way of aphasics; she simply "distorts" them. Furthermore, the aphasic fails to name objects, and experiences more difficulty in reading numbers than words. None of these features are to be found in our case—on the contrary, she reads numerals more easily than words. The backward writing, in certain respects, marches alongside the actions of mirror-writers during hypnosis and in automatic states, and conceivably even the calligraphic displays of mediums during spiritualistic séances.

Inasmuch as all the available evidence points unmistakably to a functional origin, we must perforce class this case in that lazy province of hysteria; at the same time it is the earnest wish of both of us that our attempt at elucidation may do something to stimulate a more lively interest in, and a fuller investigation of, similar problems in the future.

ADDITIONAL NOTE.

After coming to the above-mentioned conclusions, we felt in duty bound to establish our diagnosis by a trial of hypnotherapy. The patient was consequently put under light hypnosis and, whilst in this state, it was suggested to her that after waking she would write, read, and see everything normally. Before leaving the room she was asked to write the operator's name and address on a slip of paper. This was performed, quite freely and without hesitation, in an ordinary manner. The following morning this letter was received (Fig. 5).

FIG. 5.


Dear Dr Fisher
I have been asked by Dr Eager to write and tell you of my wonderful recovery. I can see the same as other people and have no need to turn books and other things up the wrong way. I can understand now why people laughed at me and my writing and other things as I have a list of the writing and I cannot read it myself

There is no doubt now that the diagnosis has been clinched. The patient has been discharged from the hospital, and so far as we can tell at present a complete cure has been effected. She takes a keen delight in writing numerous letters to her relatives and friends "just to show them how well and happy she is."

We desire to acknowledge our indebtedness to Dr. G. W. B. James and to Dr. Macdonald Critchley for the considerable help that they have given us in the preparation of this article; and to the nursing staff of the Devon Mental Hospital for their willing coöperation and assistance.

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THE THERAPEUTIC EFFECTS OF PLASMOQUINE IN PREGNANCY.

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PHYSICIAN TO THE HOSPITAL FOR TROPICAL DISEASES, LONDON.

THE chemical composition and therapeutics of plasmoquine as an efficient antimalarial remedy have recently been much in the public eye, so that its rôle in the routine treatment of the various clinical forms of malaria is now being more widely understood. This subject has been summarised in a recent paper by Prof. W. Schulemann,[1] but there is one aspect of plasmoquine therapy to which few references can be found in the literature—viz., its application in pregnancy. All those who have treated malaria on a large scale will readily recognise the dangers to which pregnant women in the tropics are exposed should they contract a virulent attack. There is a widespread and popular belief, which is fostered by European practitioners in the Far East, that periodical dosage with quinine predisposes to abortion. So strongly is this belief held that in the past I have treated pregnant patients at term who were suffering from advanced malarial cachexia but who had been strictly forbidden by their medical attendants to take quinine in any form in order to check the ravages of the fever. The grounds upon which these beliefs rest appear to be derived more from clinical experience than from scientific evidence. There exists, for instance, very definite proofs that malaria per se may be the cause of abortion, and that extensive infection of the placenta with the subtertian malaria parasite may result in the death of the child and premature expulsion. Blacklock and Gordon [2] have stated that 38 per cent. of placentæ from West African native women examined in Freetown contained large numbers of *Plasmodium falciparum*, and that 25 per cent. of children born of mothers whose placentæ were infected died within seven days. All are agreed that labour tends to light up latent malaria, for the malaria parasite may be present in the woman's blood or in her placenta, lying in a dormant condition, so that the first typical pyrexial malaria attacks may make themselves evident only in the throes of labour.

Theobald [3] has summarised the evidence in a paper read in 1930 as follows: Quinine is used in obstetrics (1) to induce labour, and (2) to render labour pains more effectual—i.e., in uterine inertia. For the induction of labour with quinine the routine adopted is to give three or four doses of quinine in ten-grain doses at three-hourly intervals, two ounces of castor oil being given after the third dose. Out of 52 cases there were only six failures to induce labour. There is no doubt that quinine does increase the severity of the uterine contractions, but in Theobald's experience these contractions are not sufficient to induce labour until the patient is at term or close to it. The fact is that quinine is valueless to the obstetrician as an abortifacient.

There appears to be no evidence that quinine, when given in the generally accepted therapeutic doses, has any effect upon the well-being of the fœtus, for Dilling and Gemmell [4] have collected a series of 9765 cases in which quinine was used to induce labour, and have concluded that in only eight stillbirths can this drug have been responsible. This then is the evidence of the obstetrician.

The pharmacologists, however, are insistent that quinine has a selective action on the uterus. Dixon [5] distinctly states that quinine may bring on labour pains in women who are predisposed to abortion. Sollmann [6] says that quinine stimulates the contraction of the uterus and increases its tone, especially when applied to the excised organ, and the greater the activity and tone of the uterus the more rapid the action of the quinine. It is usually perceptible 40 minutes after oral administration.

From the molecular structure of plasmoquine it is reasonable to infer that its therapeutic action upon the uterine muscle would be different from that of quinine, and it has been found as the result of experiments on animals carried out in the Bayer Works in Elberfeld * that in concentrations of 1 : 50,000 to 1 : 100,000 plasmoquine has no influence upon the isolated uterus of guinea-pigs. In situ, the uterus does not react to an intravenous injection of 0·05 mg. per kg. body-weight, and contraction is only observed after an injection of twenty times that amount. This, however, is thought to be due to a transitory decrease in blood pressure and not to any specific action.

Six papers have already appeared upon the action of plasmoquine in pregnancy. Jansen [7] successfully treated a pregnant woman suffering from malaria with plasmoquine 0·02 g. (gr. ⅓), twice daily, as well as with stovarsol (interval treatment with pauses of four days). Nissenbaum [8] was equally successful in a seven months' pregnant malaria patient who had previously been unsuccessfully treated with quinine for seven months. Plasmoquine, 0·06 g. (gr. 1) daily, for five courses, was given in this instance with the object of preventing abortion. Majumdar [9] treated a group of malaria patients, amongst whom were two pregnant women, with similar doses of plasmoquine, and found that the drug did not cause uterine contractions. He considers that plasmoquine has no detrimental action on the non-striated musculature and the pregnant uterus. Thakkar [10] treated a multipara in the fifth month of pregnancy with 0·06 g. daily, and found it well tolerated. In four other cases in the third and eighth months of pregnancy success was also achieved. Frank [11] in Palestine especially recommends plasmoquine in pregnant women, for he successfully treated a pregnant woman and brought her to full term by combined plasmoquine and quinine treatment. He considers it important, because in this case a tendency to abortion undoubtedly existed. Epstein [12] says that in therapeutic doses plasmoquine has no effect on the uterus. It follows that the drug can be considered safer to employ than quinine when treating pregnant women suffering from malaria.

SOME CASE RECORDS.

Since 1928 I have treated five cases of malaria in pregnant women suffering from all three species of malaria infection, from the third to the eighth month of pregnancy. All have been given plasmoquine compound in the usually accepted therapeutic doses over a period of five separate weeks. The result has been most satisfactory. My records show that no further relapse has occurred either during pregnancy or postpartum. The children have been born at full term, and the only stillbirth was due to instrumentation.

CASE 1.—Benign tertian infection, aged 34, arrived from the Federated Malay States on Sept. 5th, 1928; frequent attacks of fever since March, 1928, uncontrolled by quinine; eight months pregnant; enlarged spleen; hæmoglobin,

* Private communication.

60 per cent.; numerous B.T. schizonts and gametocytes. Plasmoquine-compound tablets, commencing with 0·03 g. plus 0·375 g. of quinine, and increasing to 0·09 g. plasmoquine plus 1·125 g. quinine. Male child born two days after cessation of first week of treatment. During puerperium plasmoquine compound, two tablets twice daily (0·04 g. plasmoquine plus 0·5 g. quinine), for three separate weeks with an interval of three days between each course.

CASE 2.—Benign tertian infection, aged 31, from Assam, seen August 16th, 1929, arrived in England Dec. 22nd, 1928; frequent attacks of malaria not reacting to quinine. Three months pregnant; spleen enlarged; slight anæmia; hæmoglobin, 80 per cent.; B.T. parasites found in India. Course of plasmoquine compound given as in Case 1; maximum dose 0·04 g. plasmoquine daily. Male child born at full term; no relapses during parturition. Reported two years later; no return of malaria.

CASE 3.—Subtertian infection, aged 33, from Tanganyika Territory; arrived in England May 17th, 1931; admitted to Hospital for Tropical Diseases on May 31st. Temperature, 103° F. First attack of malaria; seven months pregnant. Spleen not palpable; slight anæmia; hæmoglobin, 70 per cent.; many subtertian rings found. Treated as above with 0·03 to 0·04 g. of plasmoquine daily. Female child born August 4th, 1931, and died three days later in convulsions. No further relapses of malaria.

CASE 4.—Subtertian infection, aged 29, from Nigeria; arrived March, 1931, when three months pregnant. Admitted to Hospital for Tropical Diseases on June 24th, 1931. Had been suffering from relapses of subtertian malaria every seven to ten days since arrival in England. Spleen not palpable; hæmoglobin, 70 per cent.; numerous subtertian rings in blood; albumin and urobilin present in urine. Patient in critical condition. Quinine caused cramp-like feelings akin to premenstrual pains, and had therefore not been persisted with. Plasmoquine well tolerated (four tablets a day 0·04 g. of plasmoquine plus 0·5 g. of quinine). Only in hospital one week; great improvement in clinical condition. Two slight relapses reported. Male child born end of September. Seen by her local doctor Feb., 1932; no further relapses since birth of child.

CASE 5.—Quartan infection, aged 27, from Southern Nigeria; arrived in England May 1st, 1931; four months pregnant. Spleen enlarged; anæmia marked; hæmoglobin, 65 per cent.; temperature, 103° F.; numerous typical half-grown quartan parasites present. Treatment by plasmoquine compound, four tablets daily, as outlined above. Male child born at full term; no further attacks of fever.

My experience of this subject is naturally somewhat limited on account of the scarcity of clinical material, but it can be stated from the above facts that the combination of plasmoquine and quinine appears to be well tolerated by pregnant women, and is unattended by danger either to the mother or the child in all three clinical varieties of malaria. I consider that the appropriate therapeutic dose of plasmoquine compound in this condition is four tablets of the standarised product daily (0·04 g. of plasmoquine plus 0·5 g. of quinine sulphate) for five separate weeks with a pause of three days' interval between each weekly course.

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TAX ON A HOSPITAL PAGEANT.—It was reported to the annual meeting of Tewkesbury Royal Hospital that the pageant held for its benefit last summer had yielded a profit of between £500 and £600, but that more than this amount was being claimed by the customs authorities for entertainment tax.

Clinical and Laboratory Notes

TWO CASES OF GLANDULAR FEVER IN A FAMILY.

BY ALAN MONCRIEFF, M.D., M.R.C.P. LOND.,

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ACCORDING to H. L. Tidy,[1] writing in 1930, two cases of glandular fever in a family are unusual, although not unknown. Because of this and because the two following cases throw some light upon the incubation period of the disorder they are here put on record.

CASE 1.—A. B., aged 7 years, was sent to the children's out-patient department of the Bolingbroke Hospital, Wandsworth, on Feb. 16th, 1932, for fever and swelling of her glands. The history given was that on Feb. 5th the glandular enlargement "behind the ears" was first noticed and on the same day a fleeting rash, described by the mother as like a "blush" over the face and trunk, appeared. Slight fever occurred and persisted and the glandular swelling showed no sign of subsiding during the next few days. For the four or five days before her coming to hospital she had complained of slight headache and loss of appetite, but had otherwise not seemed ill and there was no sore-throat. When seen on Feb. 16th she had a temperature of 99° F. There were many small lymphatic glands easily felt in the posterior triangles of each side of the neck, in both axillæ and in both groins, and the left epitrochlear gland was easily felt. The throat was normal in appearance. The spleen was not felt but the liver was easily felt for a depth of about one inch below the costal margin. A white cell count showed 11,400 cells per c.mm. No differential count was done.

One week later the child returned to the out-patient department having stayed in bed at home. Her temperature was still raised, being 99·2° F., and the glandular enlargement was the same as before. She was admitted to hospital where a blood count was as follows: red cells, 6,100,000 per c.mm.; hæmoglobin, 112 per cent.; white cells, 13,100 per c.mm.; with the following differential count: polymorphonuclears, 52 per cent.; eosinophils, 0·34 per cent.; hyalines, 2·34 per cent.; lymphocytes (large and small), 45·34 per cent. The child remained in hospital for about ten days during which time there was no rise in temperature and the glands rapidly subsided.

CASE 2.—Meanwhile on March 1st, 1932, her younger brother was sent up to the out-patient department for the same complaint. B. B. was 5¼ years old and on Feb. 26th swellings in his neck had been noticed. There had been no rash in his case. On examination there was a slight rise in temperature to 98·8° F., but the boy looked and felt perfectly well. There were numerous shotty glands in the posterior triangles of the neck, in the left axilla and both groins, and the left epitrochlear gland was enlarged. The tip of the spleen could just be felt, but there was no enlargement of the liver. The throat appeared normal. A blood count showed: red cells, 5,800,000 per c.mm.; hæmoglobin, 98 per cent.; white cells, 13,800 per c.mm.; with a differential count as follows: polymorphonuclears, 45·67 per cent.; eosinophils, 2 per cent.; basophils, 0·34 per cent.; large hyalines, 4·34 per cent.; and lymphocytes (large and small), 47·67 per cent. The child was sent home to bed for a few days, and in a letter from Dr. Patrick Purcell, under whose care both children were at home, dated March 20th, it was stated they had both quite recovered.

These cases present several points of interest. The diagnosis in the first case could not really be definitely established until the brother became also affected, and if the brother had come to hospital as an isolated case it would have been equally difficult to be dogmatic about the diagnosis of glandular fever although it appeared to be the most likely one. The enlargement of the epitrochlear gland in both children is a point noted by other observers as common in glandular fever, while the slight predominance of glandular enlargement on the left side of the body is another small point also previously noted. The blood counts do not show a very marked divergence

from the normal of childhood, and although both the total number of white cells (over 13,000 per c.mm.) in each case, and the relative proportion of lymphocytes are slightly raised, the evidence of the blood picture alone is scarcely sufficient to establish a definite diagnosis. This serves to illustrate the point that a single normal blood count cannot be used to exclude the diagnosis of glandular fever. Possibly if blood counts had been done at different periods of the disease more striking evidence of lymphocytosis or mononucleosis would have been found.

The occurrence of a rash in the case of the girl is most unusual and it is to be regretted that it was not seen by a competent observer as the doctor was not called in until five days after it had disappeared. Tidy,[2] reviewing the 1930 epidemic, has stated that none of the children had rashes in the cases seen by him, and partly on this he has elaborated his thesis of the differing types of the disease in children and adults. The longer duration of the fever in the case of the girl, nearly four weeks in all, will fit better with Tidy's adult type than with the usual type in childhood with no rash.

INCUBATION PERIOD.

The last point of interest, and the main reason for this brief communication, is the incubation period in the case of the boy. His illness appeared to begin with swelling of the glands 21 days after his sister had first exhibited symptoms. It is impossible to argue from this that the incubation was three weeks because the exact date of "exposure" is unknown beyond the fact that he was exposed to infection during most of this period. No other cases were recognised among the friends or relatives of these two children so that it is permissible to conclude that the boy caught his glandular fever from his sister. The incubation period of the disease is usually given as from five to ten days (Tidy and Morley [3]), five to twelve days (Tidy [1]), five to nine days (Baldridge,[4] Hasselmann [5]), or seven to eight days (Glanzmann [6]), to quote some of the authoritative pronouncements on this subject. All authors are agreed, however, that the period may be longer up to two or three weeks. Krestin [7] has recorded an example during the 1930 epidemic in this country where a man developed the disease 14 days after his wife, and in an epidemic at a school in 1923 Tidy and Daniel [8] found an incubation period of ten to twelve days. On the other hand, Glanzmann [6] remarks in his comprehensive monograph that where more than one case occurs in a family the interval between the onset of symptoms is usually five days, and in the 1930 epidemic Tidy [2] describes two brothers affected by this disorder with six days between the onsets. The cases here described appear to have an exceptionally long interval between the beginning of symptoms.

I am indebted to Dr. S. E. Levitt for the blood counts in these two cases, and to Dr. Patrick Purcell, of Battersea, for the history before and after their coming to hospital.

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MALIGNANT GLANDS OF GROIN TREATED WITH RADIUM.

BY WINIFRED F. BUCKLEY, O.B.E., M.R.C.S. ENG.

THE interest of the following case lies in the fact that the primary focus of a squamous carcinoma which had invaded lymphatic glands and was apparently cured by the application of radium, remained undiscovered.

The patient, aged 65, first noticed a small lump in the right groin in the spring of 1930. She saw a doctor in April, who told her she had an enlarged gland. It was not inflamed but grew slowly, and in November she had an attack of abdominal pain with "stoppage" for two or three days. A consultant was called in, and her relatives were informed that she had malignant disease of the intestine, with secondary growth in the gland, and that nothing could be done except to relieve symptoms as they arose. She was losing weight rather rapidly. The gland continued to grow, became inflamed, and it became painful to flex the thigh. A lump in the left groin was first noticed shortly after Christmas, 1930, when a mass appeared in the upper part of the right thigh.

When I was asked to see her in April, 1931, she had a malignant growth in the right groin, just above Poupart's ligament, the size of a tangerine orange. It was inflamed and discharging; it involved the skin and was partly fixed to the deeper structures. There was an enlarged gland in the left groin, the size of a plover's egg, firm, discrete, and movable. Below Poupart, on the right side, was a mass of glands near the femoral vessels, about 3½ in. by 2 in. in diameter. There had been no recurrence of intestinal trouble, and apart from slight tenderness in the epigastrium, nothing could be felt in the abdomen. No primary focus was discovered in the cervix or body of the uterus, which was small and senile, or in the vagina, vulva, or rectum.

I asked Miss L. Martindale to see her, and it was decided to admit her to the Marie Curie Hospital for treatment. The gland in the left groin was removed for pathological examination and reported to be a definite squamous carcinoma; radium needles were introduced below the wound and were also inserted into and below the growth on the right side. The patient returned home and was readmitted in June and July for radium plaques to the right thigh. In August, as her general condition had so much improved, needles were inserted into the growth below Poupart. In three months from the first treatment the growth had entirely disappeared and is now replaced by a flat scar, pale in colour, and surrounded by pigmented skin. There is a depressed scar in the left groin, and no recurrence of growth. The mass below Poupart has disappeared. The patient, who was emaciated and very frail when first seen, put on a stone in weight after treatment and is now active and well.

The problem is: Where did this squamous carcinoma originate? If there is no central focus, why were glands on both sides affected? The primary focus cannot be intestinal, it cannot have originated in lymphoid tissue. Did it originate from a cell rest of other tissue in the gland, or from the deeper layers of the skin and penetrate the gland?

I am indebted to Miss Martindale and the Marie Curie Hospital for permission to publish this case.

London, W.

A SWEEPSTAKE COT.—The winner of a large sum in the recent Irish sweepstake has given £500 for the endowment of a cot in the West Herts Hospital. It is to be named after her child who was in the hospital many years ago.

MEDICAL STAFF OF HEREFORD HOSPITAL.—By the narrow majority of 39 to 37 the annual meeting of Herefordshire General Hospital decided to delete the following rule: "No partner of a member of the general staff shall be eligible for election to, or remain a member of, that staff." The argument in favour of the alteration was that the rule limited the discretion of the governors in selecting members of the honorary staff, but the majority of the medical staff were opposed to it.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF PHYSICAL MEDICINE.

AT a meeting of this section held on April 16th, the chair was taken by Dr. F. G. THOMSON, President, and Sir ROBERT JONES read a paper on

Manipulation as a Therapeutic Measure.

Manipulation, he said, must form an important part of the armamentarium of the orthopædic surgeon, and be only one of the many activities on which he was engaged. It was essential to consider the preventive side; in many cases manipulations were the essential sequelæ to faulty diagnosis and faulty treatment. Text-books were very inadequate on this important subject, and mistakes were frequent. It might be assumed that a stiff joint was due to adhesions, either within or without, or both, complicating some other condition or forming the sole cause of stiffness. The division into intra-articular and extra-articular adhesions was useful, but to a large extent artificial.

Adhesions related to injuries required more radical treatment than those due to inflammatory lesions; the former called for active, passive, or even forcible movement and the latter for rest. Unqualified practitioners often—and even the qualified sometimes—failed to make this differentiation; the osteopath tended to break down arthritic adhesions, while the medical man allowed traumatic adhesions to become cicatricial through wrongly prescribed rest. The following point was useful in differential diagnosis: a joint of which the movement was limited in all directions was—or had been—the seat of arthritis; a joint of which the movement was limited in certain directions only, and normal in others, was not arthritic. It was essential to know the normal movements of which each joint was capable. Stiffness rapidly following trauma (excluding fractures and displacements) suggested adhesions; the same was true of a superficial tenderness over a limited area, either on movement or on pressure, or on both. An arthritic joint was usually warmer over its whole surface than a joint with adhesions. Muscular wasting in an inflamed joint was in excess of that caused by mere desuetude; this was not the case in adhesions.

Radiography was invaluable, and should be used even in the apparently simplest case. The radiologist's reading of the film should, moreover, be welcomed. A slightly bent knee, negative to radiology, always suggested a displaced semilunar cartilage. An inflamed post-patellar pad could be felt enlarged when compared with the opposite side. A villous synovial membrane could be diagnosed by palpation and confirmed by finding thickened synovial fluid on aspiration. A bony block to full extension, confirmed by X rays, was characteristic of a displaced tibial spine. A knee which could be voluntarily fully extended, painful and of long standing, negative to X rays, was almost always affected by adhesions. A stiff, flexed knee, with limited movement, should be the subject of careful consideration before deciding on any form of manipulation.

A movable joint was not necessarily the best functional result, especially in tuberculosis. The movement naturally acquired after many years of ankylosis was often the patient's undoing; for this reason the speaker had advocated early bony ankylosis. In certain septic or rheumatic cases of arthritis the formation of adhesions might be prevented by allowing movement as soon as this caused no pain. Before movements were allowed, a precise diagnosis must be made. Torn ligaments or muscles must be protected. Gentle massage checked lymph effusion, relieved pain, and allowed early recovery of tissues, but should be dissociated from movement. A pressure pad was useful if a ligament was torn; pressure limited effusion. In the stage of effusion no painful movements should be allowed lest ligaments stretch.

If a child's joint was fixed in a normal position for a short time no more harm would result than a brief period of stiffness; this did not apply to the elderly. A joint should never be fixed hyperextended. The value of training muscles to contract without producing movement ought to be fully realised as these movements prevented adhesions within the muscle sheath. Movements should be practised in all joints having muscular attachments associated with the fixed joint.

Arthritic joints must not be mobilised until X ray plates showed the cessation of destructive processes. If an increase in movement followed cessation of fixation, gentle active movements without weight-bearing should be relied on for treatment. The experiment must be carefully watched. Active movements were preferable to passive whenever they were possible and effective; they needed hardly any supervision, while passive movements must be very carefully supervised. Masseuses seldom realised that it was only necessary to put a joint through its movements once a day.

FORCIBLE MOVEMENTS.

Recent lesions might be broken down under gas and oxygen, but a more complete anæsthetic was required for firmer bands, as complete relaxation was essential. The movements of the healthy joint under operation should be compared with those of the affected side and the joint should usually be put through its whole range at one operation. The patient should recover consciousness with his joint in full over-correction.

Sir Robert Jones then described his manipulation of a knee-joint, and of a shoulder in the elderly. After-treatment, he said, should begin immediately. An effusion could be ignored unless associated with a decreasing range of movement. Even pain did not indicate rest if the range increased with movement. Pain continuing after the movement was finished was a danger signal. In myositis ossificans rest was imperative until the deposition of bone was ended; even massage was contra-indicated. Correct alignment was of more value than end-to-end apposition in fractures of the long bones. Bones of the lower limb must be given longer to heal than text-books allowed, on account of weight-bearing. Recent fractures should not be mobilised until reduction was complete. Alternating manipulation and fixation were used for congenital deformities such as club-foot and congenital dislocation of the hip.

DISCUSSION.

Dr. J. B. MENNELL spoke of the great influence Sir Robert Jones had exerted, and recalled the history of orthopædic work in the war and the formation of the Shepherd's Bush Hospital. He said that if the range of movement were seriously limited he preferred

a two-stage operation. He asked if Sir Robert believed in the "locking" of a joint. If a joint could not "lock" the osteopathic manipulation fell to the ground unless adhesions had formed.

Dr. C. B. HEALD urged Sir Robert Jones to add further practical instructions in his printed paper. He had had personal experience of sudden "locking," relieved immediately and completely by manipulation.

Mr. J. MCMURRAY asked Sir Robert Jones if he believed that any manipulation could put right a stretched and displaced cartilage.

Dr. MURRAY LEVICK described a personal experience of "locking" in the back cured by a sudden voluntary jerk associated with an "electric thrill," obviously due to disturbance of a pair of spinal nerves. He asked how Sir Robert would treat badly strained shoulder-joints; he had found it best to rest the joint, allow adhesions to form, and then break them down. If active exercises were prescribed for shoulder adhesions, the patient used the scapula to increase the range, and the stiff shoulder was not improved.

Mr. WHITCHURCH HOWELL echoed the welcome of other speakers to Sir Robert Jones.

Dr. W. P. KENNEDY asked if Sir Robert had much difficulty in educating patients to move the muscles round a stiff joint.

Dr. E. F. CYRIAX suggested that "locked vertebræ" were due to muscular spasm round a dislocation.

Sir ROBERT JONES, in reply, said he had never been able quite to see how vertebræ became displaced, and yet the striking experiences related by many people seemed to suggest that vertebræ might be shifted. Sacro-iliac displacement certainly occurred, and yet it had never been seen in a radiograph. He thought it was very common indeed to call other conditions of a joint "displaced cartilages," although he would not say that a displaced cartilage could not be cured. Many northern football teams refused to have manipulation, as the results had proved so unsatisfactory. Sometimes patients could only be taught movements by practice on the sound side.

SECTION OF THE HISTORY OF MEDICINE.

AT a meeting of this section on April 6th the chair was taken by Dr. R. O. MOON, the President, and a paper on Medical, Theological, and Popular Views concerning the

Nightmare

was read by Dr. ERNEST JONES. During the last 30 years, he said, knowledge had been acquired which put the pathology of nightmare on an entirely new basis, but this knowledge was unfortunately the possession of but a few, the majority still holding an attitude comparable with that of a collection of mediæval medical men towards, for instance, the pathology of malaria. In early days all illness had been believed to arise from malignity, either endogenic or exogenic; the development of scientific medicine had meant the de-moralising of pathology. In laughing at this view, however, the scientific workers had made the old mistake of emptying the baby with the bath, for in some departments of pathology the moral aspect undoubtedly played a part. Few problems illustrated this fact better than the pathology of the nightmare. The early view had been that the nightmare was an attack by a throttling demon. The first suggestion that gastric disturbances produced it was found in the works of Galen, followed by Paulus Ægineta.

The chief characteristics of the nightmare were an oppressive dread, an overpowering sense of suffocation, and helpless paralysis. The somatic theories of its pathology were of subjective origin, arising from the subconscious minds of those who believed them. There was a striking lack of correlation between the supposed causes and the appearance of actual nightmare. Nightmares were pre-eminently mental manifestations based on acute anxiety; anxiety to anything approaching this degree was definitely pathological. Freud had shown the intimate connexion between morbid fear and repressed sex. Only a certain class of subject was liable to nightmare; these people were suffering from an unconscious psycho-sexual conflict, which had usually been stirred by some incident just before the dream; they had a strongly masochistic psycho-sexual constitution, and their repression always dated from very early infancy and related to incest. The attacking animal usually represented a parent. The psycho-pathological theory did not dismiss the physical theories entirely; when a morbid fear was present it could be excited by an actual situation as well as from its sources in the unconscious mind.

THE RELATION WITH EROTIC DREAMS.

Nightmare and erotic dreams in general were only distinguishable in extreme forms. Few dreams culminating in emission were altogether free from anxiety, and there was every grade of intermediate dream experience. The greater the repression the greater the fear produced by a voluptuous impulse arising during sleep. The ecclesiastical discussions on nightmare in the Middle Ages closely resembled a modern judicial inquiry into rape; the subjects might willingly submit to the attack of the incubus or might be tormented entirely against their will. "Nightmare" and "incubus" simply meant a lewd demon who visited by night. The popular view, dating from prehistoric times and accepted by the church, was that erotic dreams and nightmare arose from sexual desire in some supernatural being; while the medical view ascribed them to impulses within the body. The medical view had prevailed over the popular view for erotic dreams in the sixteenth century, for the nightmare only in the eighteenth century. The two views had much of interest in common. The modern psycho-analytical interpretation held that both nightmares and erotic dreams were endogenic and arose from a repressed sexual wish, thus combining the truth in the two older theories. There had to be error in each theory in order that its believers might escape the sense of guilt; the sexual origin was projected either on to other beings or on to some inanimate process in the body.

The CHAIRMAN asked whether true nightmare was very common. He recognised the intermixture of pleasure and pain, but did not think fear was on quite the same footing. He suggested that Freud confused genus and species—generalised libido and sexual desire; his doctrine was just as materialistic as any other variety of scientific materialism.

Dr. WILLIAM BROWN said that throughout the ages philosophers had shown flashes of illumination about the dream. The dreams of antiquity illustrated psychological principles. Plato had regarded them as a manifestation of the lower self. Descartes had realised, as Aristotle had, that the dream magnified experiences. Spinoza had said that it worked independently of the control of external impressions, and therefore became ridiculous. Dreams were the guardian of sleep, taking up into themselves disturbing stimuli, but in extreme anxiety-dreams this function

was destroyed. Dr. Brown found it difficult to accept the theory of very early incest impulses put forward by Dr. Jones, though he had been able to verify the general theory that nightmares were related to repressed sexual impulses. The intense stimulation of the emotion of fear in a repressed form could explain many of these phenomena. Fear was more fundamental than sex in human life. Over-stimulation of the nervous system by general fear aroused strong sexual feelings. He would not say that these early incest tendencies were not present; but they were difficult to elicit, and it seemed unnecessary to invoke them.

Sir ROBERT ARMSTRONG-JONES described personal experiences of nightmare, and confessed his inability to regard them as wish-fulfilments. He regarded them as recalls of former fear-stimuli by association. The sex motive seemed to him fantastic, and he declared his belief in vitalism, particularly hormism. His experience had not suggested that dream interpretation helped the treatment of the insane. He protested against the present tendency to regard all mental abnormality as due to disorder of the endocrine glands.

Dr. JONES, in reply, said that terror dreams were common but typical nightmares were uncommon.

The CHAIRMAN, on behalf of Dr. B. FARRINGTON, read a paper on the Preface of the De Humani Fabrica of Vesalius. In these prefatory declarations, he said, the great master spoke from the zenith of his career, fully conscious of his worth. Dr. Farrington had translated the declarations into modern language, and the translation would be published in the Proceedings. He read extracts from Dr. Farrington's work.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

AT a meeting of this section on April 15th with Mr. VICTOR BONNEY, the President, in the chair, a paper on

Ectopic Gestation

was read by Prof. H. LEITH MURRAY (Liverpool). It presented the results of an experience of 146 consecutive cases, and was written expressly from the standpoint of the gynæcologist as opposed to that of the general surgeon. The attitude of the latter, when faced with an urgent abdominal crisis, usually led him to carry out exploratory laparotomy, and he often missed the finer points of diagnosis. The series of 146 cases, on which he had himself operated, contained no ovarian pregnancies, no bilateral tubal pregnancies, and no interstitial or cornual pregnancies; nor were there any obvious tubal abnormalities or any suggestions of external or internal migration of the ovum. In the whole series there had only been four desperate emergencies, and none showed primary intraperitoneal rupture. More than half the cases were moderately serious, and usually with somewhat long histories of pain and bleeding, with considerable invalidism. Two patients' first complaint was that they were sterile. He always operated on making the diagnosis, for he mistrusted tubal gestation and in ordinary cases the diagnosis should be easy. It should be suspected in all cases with a short history suggesting pregnancy and with the symptom of pain out of proportion to that found in early abortion. Four times he had operated and found a condition which was an acute exacerbation of old appendage disease, with peritoneal shock due to leakage. Two patients died, and both had a long history of misdiagnosis, with much anæmia and intraperitoneal bleeding. The average age of all the patients was 30; in 84 cases the condition was on the right side, in 62 on the left; in 103 cases the pregnancy was ampullar, 40 being isthmial.

The possible terminations of tubal gestation included spontaneous cure, rupture, or continued growth. He favoured operation in every case diagnosed as tubal gestation; it gave immediate relief of symptoms and a rapid convalescence. In 53 of the 103 ampullary cases the fœtus was almost extruded, or seemed likely to be. In 15 of the 40 isthmial cases it bulged outwards and sideways, and there seemed but slight chance of extrusion into the lumen of the tube. He had histological evidence of absorption in situ in only one case. He had met with only 11 cases of primary intratubal rupture, with the fœtus varying between a quarter of an inch and one and a half inches long, and 92 per cent. of his cases showed primary intratubal rupture without further complication. In 71 out of 94 cases there was evidence of considerable round-celled deposit; in 23 there was none. He had no case of primary extratubal rupture; and in none of the cases of tubal pregnancy was there clear evidence of primary intraperitoneal rupture. There was evidence that spontaneous cure might frequently occur.

Prof. Murray then proceeded to discuss the ætiology of tubal pregnancy. Twenty-six of his cases showed absolute sterility; 24 showed one-child fertility with an interval ranging between 5 and 14 years. In studying the likelihood of endosalpingitis as a cause of tubal gestation, he submitted that mild trouble, with maintenance of the patency of the tube, was more likely to be a cause than severe infection. There were six cases of recurrent tubal gestation. The causes of tubal gestation must be of very mild character, and so were liable to be overlooked. If appendicitis was a factor, it did not follow necessarily that its effects would be in the right tube alone. Of the 133 cases of tubal pregnancy, 50 were associated with reduced fertility, and in 42 of the 50 there was evidence of old peritoneal infection. Fifty showed evidence of old pelvic inflammatory infection. He asked that workers in this field would make a more careful statement of what they found in the vermiform appendix in cases of tubal gestation.

A paper by Prof. LEITH MURRAY and Dr. A. A. GEMMELL (Liverpool) was read by the latter on two cases of

SIMULTANEOUS INTRA- AND EXTRA-UTERINE PREGNANCY

of which they said 213 cases had been recorded.

The first of the two patients was a woman, aged 34, who had been married four and a half years. She had one normal labour in 1925 and a miscarriage in 1927. In 1919 a growth was removed from her breast, and in 1927 she had cholecystectomy. The last menstrual period was at the end of October, 1928, and early in 1928 she had a profuse vaginal hæmorrhage which lasted a week. She was taken into hospital in the following January, having had pain in the left iliac fossa, radiating to the right; for six weeks defæcation had been painful. In the previous month she had had acute abdominal pain with violent vomiting. There was a mobile swelling in the hypogastrium, extending three fingers-breadth above the symphysis pubis. The cervix was soft and mobile; the body of the uterus was large and its consistence suggested pregnancy. On the left side was a tender swelling attached to the uterus. Abdominal section was performed on Jan. 15th. Dark blood could be seen through the peritoneum, and as soon as the peritoneum was excised a 12-weeks' fœtus presented. Because of the amount of handling of the pelvic organs it was decided to empty the uterus, which also contained a fœtus. A cystic portion of the right ovary was incised, but it did not contain a corpus luteum. Uninterrupted recovery followed.

The second woman was aged 35 and had had two children, the second nine months ago. Menstruation was regular.

She had had acute attacks of pain in the left side, and in the last she nearly fainted. Attempts at micturition produced cramp-like pains. On opening the abdomen a moderate amount of blood was found in the left half of the pelvis. The left tube, which was the size of a sausage and contained an ampullary mole, was removed. After the operation she bled for three days, but there was no suggestion of labour pains. The size of the uterus corresponded with the period of amenorrhœa, and natural delivery of an 8 lb. child occurred.

It was clear that many cases had been included in this title which should not have been. The maximum incidence of this condition was in the active child-bearing period—i.e., 25 to 35 years of age. It seemed that previous pregnancies predisposed to the condition, and hence that postnatal complications were causal factors. There were no definite criteria available on which to base a prognosis as to the fate of the intra-uterine ovum. Cases in which uterine pregnancy occurred in the presence of a retained ectopic pregnancy should be placed in a separate category. A retained fœtus was not apt to cause symptoms, and even a subsequent intra-uterine pregnancy, with disturbance of the abdominal contents, was but little likely to provoke them. Neither was the retained fœtus likely to cause difficulty in labour.

DISCUSSION.

Mr. CLIFFORD WHITE referred to a case of extra-uterine pregnancy in a woman who had had a child five years before, and a miscarriage six years before.

She was admitted as an emergency; she had had severe vomiting and bearing-down pains. On admission there were signs of acute intraperitoneal hæmorrhage, and an abdominal mass was evident. Laparotomy was immediately done, and the left tube was found to be gravid, the uterus being enlarged to the size of a 12-weeks' pregnancy. Both ovaries were healthy, and neither was removed. In a few months she was delivered of a living child of 8 lb. 13½ oz. weight, and it weighed 9 lb. 3 oz. when the mother was discharged.

Mr. W. C. W. NIXON spoke of the significance of a purple discoloration around the umbilicus in cases of ectopic pregnancy.—Mr. A. J. WRIGLEY said that at St. Thomas's Hospital a large proportion of cases of ectopic pregnancy were operated upon by the general surgeon. Salpingitis was present in one case in five.—The PRESIDENT said it had recently been his view that there must be some defect in the tube in these cases, perhaps a low degree of inflammation. Non-inflammatory kinks were probably a common cause of tubal gestation.—Dame LOUISE MCILROY asked whether Prof. Murray had had experience of pain being referred by the patient to the shoulder in these cases; she had had one or two in which that was so. She also asked whether he always removed the affected tube. In one or two cases in her experience the ovum was projecting from the tube, and after she squeezed it out complete recovery followed.

Prof. MURRAY replied that he was not aware of having seen a case with purple discoloration. In only a few cases was pain referred to the shoulder-tip. In few of his cases was there a large effusion of blood; he had never intentionally conserved a tube unless there was a special reason for doing so.

Mr. DOUGLAS MACLEOD read a paper on two cases of

Struma Ovarii.

An alternative term, he said, was ovarian goitre, and the condition was an ovarian tumour, most of which consisted of thyroid tissue. These cases supplied information favouring the teratomatous origin of these tumours. Thyroid tissue was a small part of teratomatous cyst, and in some cases it grew out of all proportion to other structures. He thought that sytematic examination would show that thyroid tissue was present in tumours of this region more commonly than was generally believed; it was usually of the colloid type. In the subjects of these tumours menstrual irregularities were frequently noted, and usually the women were multiparæ. Yet symptoms of hyperthyroidism were conspicuous by their absence. The first of these tumours contained hair, skin, and sebaceous material, and the macroscopical appearance was a honeycombed one. The second case was complicated by an inflammatory condition. The thyroid tissue was in the lining of the cyst, and so was actually part of it.

The PRESIDENT described two cases of

Implantation-endometriomata.

He said he had had, in all, six cases of endometrioma in the abdominal wall; they had followed either abdominal curettage or myomectomy. A lump appeared in the abdominal scar, and gradually increased in size, in a period of from two to six years. In one of these present cases the lump was the size of a walnut, and it became very tender and painful at each monthly period. On excision he found the tumour to consist of a strong fibrous matrix, with hæmorrhagic areas and typical endometrial tissue, uterine glands, and stroma. He brought the matter forward to impress the lesson that in abdominal curettage and myomectomy it was very important to cover the wound edges with linen—better with rubber—sheeting; otherwise scrapings might get implanted and cause such a swelling as that described.

Prof. MURRAY said he had done myomectomy and intra-abdominal curettage many times, but had not yet had a case of implantation tumour, though he had never troubled to protect the edges of the abdominal wound.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

AT a meeting of this section on April 1st, with Mr. R. ATKINSON STONEY, the President, in the chair, a case of

Hirschsprung's Disease

was reported by Sir WILLIAM WHEELER.

The patient was a boy, aged 2 years, suffering from increasing constipation and marked abdominal distension. Aperients and enemata had failed to act, and distension was progressive. There was the usual absence of signs of obstruction and toxic symptoms were not marked.

The case presented one unusual feature. The pelvic colon was not dilated for two or three inches above the pelvirectal sphincter, and the rectum was normal. Radiography before operation showed an enormous loop of descending colon. The barium meal was visible a week after ingestion, notwithstanding repeated washing out of the colon. The barium enema also revealed the colon to be five or six times the normal diameter. The ascending colon was not dilated, and the transverse only moderately so.

The operation, performed in February, 1931, was that recommended by Rankin and Learmonth. The posterior peritoneum was divided from the promontory of the sacrum to the origin of the inferior mesenteric artery. The presacral nerve and its branches were not found easy to define, but communicating filaments from the second, third, and fourth sympathetic ganglia were divided and the area cleared of loose connective tissue. The inferior mesenteric artery near its origin was similarly denuded, but no very definite ganglia were found. The operation was rendered more difficult by the attachment of the mesocolon to the right of the middle line.

Sir William said he had some difficulty in deciding whether he was dealing with tiny lymphatic vessels and glands, instead of nerve-fibres and ganglia, in the course of the operation. In an infant, he was not sure that frank exposure of the lumbar sympathetic chain on the left side and division of the trunk above the second and below the fourth ganglion was not the more satisfactory operation, ramisection being performed at the same time. The constipation was completely relieved by the operation, and this relief had now continued for 14 months.

After operation, a full-sized sigmoidoscope was passed through the pelvirectal sphincter on a few occasions, the colon being emptied by means of an irrigating tube. Two months after operation a barium meal and enema demonstrated the pelvic loop of colon still dilated but greatly reduced in diameter. The transverse colon was also considerably reduced. Seven months after operation marked dilatation was still present, but there was slight further improvement. The umbilical girth at the time of operation was 24¾ inches. Five days later it was 21¾ inches, and the latter measurement was the same two months later. Seen recently, the child's general health was good; the constipation was relieved, but distension remained.

Mr. A. B. CLERY showed a boy, aged 6½, who was badly burned across the chest and neck, and successfully treated by a skin graft.

Mr. A. A. MCCONNELL read a paper on Some Lesions in the Region of the Pituitary Body.

REVIEWS AND NOTICES OF BOOKS

Diseases of the Kidney.

By W. GIRLING BALL, F.R.C.S. Eng., Surgeon to St. Bartholomew's Hospital, London; and GEOFFREY EVANS, M.D. Camb., F.R.C.P. Lond., Physician to the Hospital with charge of Out-patients. London: J. and A. Churchill. 1932. Pp. 424. 36*s*.

A BOOK devoted exclusively to diseases of the kidney is clearly an ambitious undertaking. It is good that two writers of the calibre of Mr. Girling Ball and Dr. Geoffrey Evans should have collaborated to produce this volume. The value of a combined medical and surgical text-book on the kidney is exemplified sufficiently in one chapter only, that on symptomatology. The surgeon confronted for example with a case of renal hæmaturia is too often inclined to neglect the medical possibilities of the diagnosis, but he will not do so if he has digested the information here supplied. Again in the account of the examination of a urinary case, the value of collaboration is evident.

The surgical part proper opens with an account of the congenital lesions of the kidney and ureter: there are numerous illustrations with short clinical descriptions appended of which full use must be made to amplify the text. These illustrations are all good, and help the story, while certain of them are admirable. The characteristic mesially directed lower calyx in horse-shoe kidney is only mentioned beneath an illustration in another chapter (Fig. 52) and not in the general text, but no careful reader should be embarrassed thereby. In the discussion on movable kidney there is evidence of a proper appreciation of the value as well as the limitations of surgical treatment, and in the advice upon kidney injuries conservative methods are rightly recommended where possible, the indications for surgical intervention being adequately summarised. The chapter on hydronephrosis is of particular interest and includes mention of the majority of the accepted causes of the condition. The exact views of the authors on the question of hydronephrosis of uncertain ætiology are not made quite clear, for whilst on page 157 we find the term "congenital" hydronephrosis allotted to those cases occurring in fœtuses or young children, or due to some congenital abnormality in position or structure of the kidney or its vessels, there are subsequently frequent references to cases regarded as congenital hydronephroses to which these criteria do not apply. It is generally recognised by urologists that the so-called abnormal vessels frequently found in adult hydronephrosis are not primarily abnormal, and that their kinking effects on the uretero-pelvic junction are only produced after the hydronephrosis has already commenced to form. There is a vessel described as abnormal in the caption to an illustration on page 174 which would appear to be the normal inferior branch of the renal artery; if this is so, the case should rightly fall into the group classified as hydronephrosis of uncertain ætiology instead of being regarded as a congenital hydronephrosis. It is a small point, and the authors' interpretation of the picture may be right; the doubt is raised to show how carefully the book needs to be read. The discussion on the ætiology of the unexplained cases includes mention of the theories ascribing it primarily to inflammation, congenital narrowing, and spasm respectively of the uretero-pelvic junction. The question of pyelovenous back-flow is dealt with in the pathological section.

In the chapter on non-tuberculous infections the classification adopted is founded on a distinction between cortical and pelvic infections, with acute suppurative nephritis as a connecting link; this is a sound basis on which to describe these infections and has led to an orderly account. *B. coli* infections in general are regarded as being hæmatogenous in the majority of cases, whilst tuberculous infection is stated to be blood-borne when the primary source is distant, and lymphatic when the primary source is in the neighbourhood of the kidney. The less controversial subjects of tuberculosis and calculus are well described, and the chapter on renal tumours includes a simplified classification of the malignant renal growths; a few histological microphotographs might be included in this section with advantage. The account of operations on the kidney supplements those in the standard text-books of general operative surgery, but in none of these, we think, will be found such close descriptions of the difficulties and risks that may be encountered or greater descriptions of the routes of operation.

Certain portions of the book dealing with what are usually considered the purely medical aspects of renal disease would be disappointing if it were not remembered that to expect a lucid exposition of a subject where so much of our knowledge is imperfect would be illogical. On page 48 the term "uræmia" is properly limited to those toxæmic states which complicate or terminate severe kidney disease and in which urea retention occurs, but in the sentences immediately following this distinction disappears, while the conception that pseudo-uræmia is a consequence of hypertension as opposed to a chemical phenomenon is not sufficiently brought forward. These passages form an example of the demand for close reading which is made. The truth may easily be sacrificed in the attempt to be clear and simple, but nothing of the sort is found here.

The authors state that the classification and nomenclature of Bright's disease follow the British medical tradition, and that there is no radical departure from traditional teaching, despite American, German, or French views on nephritis. It was a wise decision, however, to accept the conception of nephrosis as standing between toxæmic kidney on the one hand and acute nephritis on the other, and the design to follow British medical tradition has not prevented the authors from recognising the modern conceptions of focal embolic nephritis and hyperpiesia. The establishment of "toxæmic kidney" as an entity is not easy. On page 201, for example, it is stated that this group includes all those forms of kidney disease, histologically chiefly degenerative, which are conterminous with their cause, a view which does not harmonise with the inclusion in this group of many of the most disastrous types of nephritis occurring in pregnancy. The student of modern work on renal disease in its medical aspects is accustomed to select the group described as "chronic interstitial nephritis" as a touchstone to the author's general conception. When this is applied to the present work some disappointment will be felt at the nebulous character of the group described. The second paragraph on page 258 appears to define the cases included under this term, but after close study we find ourselves unable to form any clear idea of what the authors really wish to be included under this heading.

The book contains useful descriptions of technical methods, is beautifully illustrated—there are eight coloured plates and 159 text-figures—and forms a valuable addition to existing literature on the subject.

Alcoholic Fermentation.

Fourth edition. By ARTHUR HARDEN, Ph.D., D.Sc., LL.D., F.R.S., Emeritus Professor of Biochemistry, University of London. London: Longmans, Green and Co., Ltd. 1932. Pp. 243. 15*s*.

THIS standard work, which has now reached its fourth edition, needs no introduction to biochemical readers. Alcoholic fermentation is now a subject of its own, and the advances in recent years have been so great that, as Prof. Harden says, it has been all but impossible for him to cover the additions to the literature made since the publication of his last edition. He succeeded in summarising the most important papers, and has included all the recent advances. The summary of the more recent observations of Euler and Neuberg is a brilliant piece of work. This work is indispensable to anyone interested in enzymes in general and in alcoholic ferments in particular.

Recent Advances in Botany.

By E. C. BARTON-WRIGHT, M.Sc. Lond., Chief Assistant for Research in Virus Diseases of the Potato at the Scottish Society for Research in Plant Breeding, Corstorphine. London: J. and A. Churchill. 1932. Pp. 287. 12*s*. 6*d*.

THE subject matter is divided into nine chapters, of which one is devoted to some theories regarding plant structure and one to palæobotany and experimental methods in relation to the species problem; the fungi take up three chapters, and the brown and red algæ two. The last chapter dealing with the virus diseases of plants is likely to be of most interest to our readers, for it provides in easily accessible form a summary of the information so far obtained with regard to this obscure subject in plants. In the selection of material for review the author has omitted special reference to the genetical and cytological aspects of the subject as both these branches are to be treated by other authors in future volumes. Where necessary, references to literature of pre-war date have been included in order to present a connected picture of each subject dealt with. The book should prove particularly useful to students reading for final examinations in botany.

Clinical Lectures on Psychological Medicine.

By HENRY YELLOWLEES, O.B.E., M.D., Physician for Psychological Medicine, St. Thomas's Hospital. London: J. and A. Churchill. 1932. Pp. 310. 12*s*. 6*d*.

THE range of these clinical lectures is very wide: the whole of mental disorder is discussed in 14 entertaining sections of a book which has retained the familiar language, the discursiveness, pointed illustrations, and lively anecdotes which stimulate the student's interest. The psychoses are dealt with mainly from the Kraepelinian standpoint, with brief reference to the writings of Meyer and McCurdy; the psychoneuroses according to the modified Freudian view now current among most non-Freudian psychotherapists in England. On some points the author's statements are disputable—e.g., his insistence on insight as an unfailing touchstone permitting sharp distinction between psychoses and psychoneuroses, but as the work is not intended for psychiatrists, such part-truths may be permissible. The book is professedly elementary; it would therefore be unreasonable to complain that it is dogmatic. The style is easy, and in places almost rollicking; the author is a psychiatrist of much clinical experience and common sense; and the simple, confident mode of presentation is well suited to the purpose of instructing medical students and general practitioners in the outlines of psychiatry. The final chapter, an address to psychologists, contains a vivacious criticism of the Freudian position, ending with a serious estimate of the ultimate task of psychology which Dr. Yellowlees sees as bridging the gulf between science and the mysteries with which religion alone deals.

A Synopsis of Pharmacology.

Second edition. By the late DOUGLAS COW, M.D. Revised by G. NORMAN MYERS, M.D., B.S., M.Sc., B.Sc. Hons., A.I.C., Beit Memorial Fellow, Pharmacological Laboratory, University of Cambridge. London: J. and A. Churchill. 1931. Pp. 171. 7*s*. 6*d*.

THIS small book, originally dedicated by its author, the late Dr. Cow, "to that Great Army of Medical Students, some 80 per cent. of the whole who in examinations are within measurable distance of the Rubicon that divides the approved from the rejected," quickly proved its worth. It is described as a synopsis, but it is rather more than that, for it contains an accurate and fairly complete account of the essentials of modern pharmacology. It could not be used as a text-book by any one ignorant of the facts, but it will serve to refresh the memory of the student who has read or heard something of the subject. The drugs are arranged in alphabetical order, repetition is avoided by a system of cross-reference, and there is a pithy discussion of the main facts of each. Dr. Myers has carefully revised the first edition to bring it up to date, and his policy of keeping prominently in view the practical needs of the student, should ensure for the second edition the usefulness and popularity of the first.

THE LANCET.

LONDON: SATURDAY, APRIL 23, 1932.

TRAINING IN TUBERCULOSIS.

THE Joint Tuberculosis Council consists of 30 members representing the various societies interested in tuberculosis, with delegates from the Society of Medical Officers of Health, the British Medical Association, the Ministries of Health and Pensions, and eight coöpted members. The Council was formed in 1924 for the purpose of coördinating the study and treatment of tuberculosis and to promote research. Questions are referred to it by government departments, local authorities, and workers in various fields. Important memoranda on notification, disinfection, and employment have been issued, and in 1930 a scholarship tour was arranged in collaboration with the Sun Life Assurance Company of Canada. A report just issued by a committee of the Council discusses the problem of teaching tuberculosis to students and officers of the tuberculosis service. Most of the tuberculous patients who used to attend teaching hospitals now attend the tuberculosis dispensaries or from there are sent to one of the special institutions provided by local authorities. It is possible at the moment for a medical student to present himself for his final examination without having seen a single case of pulmonary tuberculosis, although each year some 40,000 people die of this disease in England and Wales alone. Apart from its importance as a disease, tuberculosis has some claims to be considered a subject on which medical teaching should be based. The teaching of tuberculosis to students would give them an insight into the relationship between social and industrial conditions and the incidence of disease. It would also assist them to know how to examine the chest, for physical signs and X ray interpretations can be learnt better at a chest hospital than elsewhere. Again, the principles of orthopædics can be well taught at a hospital for surgical tuberculosis. To arrange for a more thorough teaching of tuberculosis need not increase the burden of the student whose curriculum is already overcrowded. A knowledge of tuberculosis would help him to understand the principles of pathology and treatment as applied to other diseases; there is no subject better suited for instructing students in first principles. While the claims of syphilis, mental disease, or rheumatism may be admitted, tuberculosis stands alone in this: although one of the most common causes of illness and death it is becoming more and more uncommon in the out-patient departments and wards of teaching hospitals, except such as have a tuberculosis dispensary.

The report makes the following recommendations for training:—

1. That with some notable exceptions the present methods of training students in tuberculosis are inadequate for lack of arrangements ensuring close coöperation between the public health service, and the medical schools and teaching hospitals, thus not utilising clinical material in the dispensaries and sanatoria belonging to public authorities. The General Medical Council might urge upon these schools and hospitals the importance of coöperation.
2. That the arrangements for teaching at certain medical schools, where medical officers of the tuberculosis service are lecturers in tuberculosis and have charge of beds, are worthy of consideration at other medical schools where no arrangements at present exist to utilise the personnel and material available under the tuberculosis schemes of the local authorities.
3. That, where Local Government grants are given to assist medical schools or teaching hospitals, it would be reasonable for the authorities to require, as a condition of the grant, proper coöperation with the work of tuberculosis schemes.

These recommendations are worthy of careful consideration, and although it may be impossible or unwise to give to all students a special training in tuberculosis it is undoubtedly a disease with which they should be familiar before qualification. The work of the tuberculosis officer is becoming more and more specialised, and only a man of high professional standing with experience in all forms of tuberculosis can act adequately as consultant and adviser to the general practitioner. It is reasonable to require that every tuberculosis officer should have hospital beds at his disposal and that, where convenient, the medical staff of a sanatorium should be responsible for some clinical work outside the institution. The report is signed by twelve members of the Council and the convener, Dr. G. LISSANT COX. Copies may be obtained from Dr. ERNEST WARD, hon. secretary of the Council, 123, Torquay-road, Paignton, Devon.

STREPTOCOCCAL INFECTION.

THE subject of this year's Milroy lectures has been aptly chosen. Since the war the volume of original work on streptococcal infection has been immense though of very various value. With some of that work Prof. C. C. OKELL has been intimately associated, and his own contributions have been among the most enlightening. These years have seen a return to many ideas which were long forgotten; in the latter part of the nineteenth century, for instance, both the toxic properties of streptococci and the streptococcal ætiology of scarlet fever were well accredited theories. There are now many established facts to go upon and the time was ripe for the comprehensive summary and criticism which the lecturer concludes in our present issue.

To many surgeons and physicians the present position is a disappointing one. It is very true that scarlet fever is now a relatively slight disease, that the terribly virulent cases of cellulitis and septicæmia are rarer. As Prof. OKELL admits, this result is a by-product of medical hygiene, if in fact medicine can claim any credit for it. In much the same way small-pox appears to have

lost its virulence in an increasingly unvaccinated community. This diminished virulence of the streptococcus has lasted for 50 years; and that is a good omen for its perpetuity. But puerperal sepsis remains, almost unaltered in virulence or case-incidence, and the history of epidemic disease should make us chary of hasty optimism. Moreover, experience is teaching that serum therapy has narrow limitations. Acute streptococcal infection is very often the result of an inconsiderable accident; it is an acutely painful disease, and its too often fatal outcome renders it the most distressing of conditions to treat. The impotence of the physician, dealing with a patient, often young, faced with the fatal outcome of a trivial wound, and relatives appalled by a sudden dangerous illness supervening on a state of perfect health often force him to premature incisions which are worse than useless, and make him anxious to use every suggested remedy. Antitoxic sera have been very fully exploited; they have their uses, and will probably always be used; but they are far indeed from proving of universal value. Under these conditions Prof. OKELL'S lectures may be considered as an expert's report in the breathing space that follows an unsuccessful attack in war. Here is all that experience has taught, and here success and failure are weighed. We have learned a great deal about the enemy; we are glad to know that, with or without our assistance, he is losing ground. We have evolved a few weapons, but they are not enough. Where are we to look in the future? Perhaps, for the present, to the clinician rather than the bacteriologist. In a streptococcal infection which is to have a fortunate outcome, certain features are constant. A continuous fever becomes intermittent; what is the cause of these remissions, and how can we prolong them, and thus relieve the heart? A spreading cellulitis becomes localised; a septicæmia changes to pus formation. How are we to encourage these obviously beneficial changes? Laboratory work has, for the moment, reached the end of its tether; the natural course of disease must be studied, and its lessons must be applied.

If the streptococcus, the pneumococcus, and the staphylococcus were removed from the list of human parasites, infection even to-day in civilised countries would be negligible as a cause of death. They are universal in the bodies of men and animals as saprophytes; we cannot hope to eliminate them by hygienic measures. There are no antidotes for their infections truly and comprehensively specific. Chemotherapy, to date, has helped very little; and EHRLICH'S aspiration towards a great universal bactericidal drug seems as far off as ever. Such a situation cannot but stimulate research workers to a fresh outlook and new lines of attack. "When I fixed unwearied eyes on them," said LEEUWENHOEK, reporting the discovery of bacteria, "I saw their bodies bending with languid motion, making little progress." It is something to be convinced, once again, from Prof. OKELL'S lectures, that the eyes of the bacteriologist are still unwearied.

CLINICAL RADIOLOGY.

DURING May, June, and July a course of twelve clinical lectures is to be given at the Radium Institute in London, which is now a constituent part of the National Centre and Post-graduate School of Radiotherapy. The lectures, which are open free of charge to registered medical practitioners, will be accompanied by demonstration of cases illustrating treatment by radium of many regions of the body including skin, tongue, larynx, nasal sinuses, pharynx and œsophagus, breast, rectum, bladder and prostate, the use of radiotherapy in gynæcology, the treatment of sarcoma, and the application of deep X ray therapy. The lecturers are either on the staff of the Centre or members of the teaching staff of various London hospitals, and the course follows in many particulars the precedent of the pioneer course in radium treatment given at the Westminster Hospital in 1929, and embodied in a volume of the hospital's reports.[1] That course was offered in the spirit of Trousseau who, in opening the first session of a new academic year, was accustomed to tell his hearers that he expected to learn as much from them as they from him; and the cognate aim of the Post-graduate School is to stimulate interest in therapeutic radiology in London, especially among young consultants and the resident staffs of the teaching hospitals. For this reason the lectures have been spread over three months at weekly intervals instead of being concentrated as before in a course of a month's duration. The Radium Commission has been conscious from the first that the progress of radiotherapy is closely bound up with the popularisation of the principles of its application through such channels. Those who know most realise best how imperfect is our knowledge of the action of radium upon the tissues. As Prof. SIDNEY RUSS points out in his paper in our present issue we are still more ignorant of the general physiological effects of gamma rays than we are of their immediate effects upon cell life, whether malignant or otherwise; it is, he thinks, an encouraging sign that physiologists are beginning to include radiation as an instrument for their own use, for this will benefit not only physiological study but will in turn yield results having an important bearing on radiotherapy. A course of lectures such as that now planned, if it should succeed in attracting a number of those who are in touch with the modern technique of treating disease and have not yet forgotten the physiological principles of their earlier study, should produce just the impulse to progress which radiotherapy needs. Prof. RUSS indicates directions in which study might bear fruit. It is well known that large doses of gamma rays have a destructive action upon the bone-marrow; it is not so generally known that the cells which disappear from the circulation are not necessarily destroyed, they may be no more than temporarily withdrawn. The importance of the part played by the normal cells of the body

[1] Westminster Hospital Reports, vol. xxi. Radium Practice, 1929. Edited by E. Rock Carling. London: H. K. Lewis. 1929.

in the vicinity of the malignant growth is still insufficiently recognised; he would like all who are in touch with the clinical effect of radiation to bear in mind to what an extent some of the vital functions of living tissues are put out of action by a quantity of radiation which has but a trifling action upon their other processes. A case recorded by Miss WINIFRED BUCKLEY on p. 884 of our present issue raises, without answering, several of these questions.

The course of lectures, which we commend to the attention of all our readers, will be given on Wednesday afternoons at 4.30 P.M., beginning May 4th, at the Radium Institute, Riding House-street, London, W.1. Particulars may be had from the Secretary of the Institute.

ANNOTATIONS

THE INDIAN MEDICAL COUNCIL BILL.

THE proposal to set up an All-India medical council has been approved by the Secretary of State, and a Bill has now been introduced into the Indian legislative assembly. Several attempts have been made to bring the various interests into agreement, but so far without definite result. The chief obstacle no doubt has been the feeling of resentment at the action of the General Medical Council in withdrawing recognition of Indian degrees. Now that the political horizon is clearer, and there has been time to appreciate the motives of the G.M.C., agreement has been brought nearer. But there are still difficulties to be surmounted, and the Bill, if it becomes law, will have to be a compromise. The draft is entitled "A Bill to establish a Medical Council in India and to provide for the maintenance of a British Indian Medical Register." It is proposed that the council shall consist of a president, to be nominated by the Governor-General in Council, or alternatively elected from amongst themselves; one nominated member from each governor's province and three from the government of India; and one elected member from each British Indian university and each provincial committee of the council. The total number of members to begin with would be 28, and the council would meet at least once in each year, much of the routine work being done through provincial committees. Such committees are to be constituted in all provinces in which a provincial medical council exists, and will include all members possessing recognised medical qualifications. The functions of the council will include regulation of medical standards and inspection of examinations, the maintenance of a register, and recognition and withdrawal of recognition of medical qualifications. Decision as to erasure of names from the register for improper conduct will be taken by provincial medical councils, or provincial committees of the central council, or the central council itself, under varying circumstances. It is recognised that the powers which the provincial councils have hitherto exercised will be affected, but this is inevitable, and the provinces will have to be asked to submit in certain matters to the jurisdiction of the All-India Council. Much work will still remain for them to do. No mention is made in the draft of the licentiate class. There was a general consensus of opinion at the conference of June, 1930, that the central council should at first, at any rate, deal only with graduate qualifications; but nothing in the Bill excludes non-graduates permanently. Organisations of licentiates have petitioned the Government of India for inclusion and there are many arguments in its favour. Licentiates far outnumber graduates. They fill a very important place in the medical arrangements of the country, and their education and status are in need of regulation and standardisation. It is significant that the licentiates themselves are continually pressing for extension of their curriculum, and improvement of the medical schools in which they receive their training. Criticism has also been aroused by the fact that there is no provision in the Bill for the reservation of official appointments and other professional privileges to registered practitioners. It is satisfactory to note that the main principle of the Bill has met with general approval by the profession at large.

THE CAUSES OF HOOKWORM ANÆMIA.

RATHER over a year ago [1] under this heading we summarised evidence for the conclusion that waste of blood by hookworms was the essential cause of the anæmia they produce. Since then the matter has been carried for one species from the region of reasoned conclusion towards that of observed fact. By devising a clamp which, while not interfering with blood-supply, forms a small tank filled with normal saline, H. S. Wells [2] has watched the life of hookworms in the opened intestines of dogs narcotised with soluble barbital. The whole process can be seen when *Ancylostoma caninum* attaches itself near the tip of a villus, though the worm is in fact restless until it, so to speak, shoulders its way to a deeper and presumably more vascular hold. The blood-vessels of the selected villus dilate remarkably, yet hitherto it does not seem to have been suggested that a vasodilator is one of the substances secreted by the glands which open in or near the hookworm's mouth. Yet that would now seem to be the case, and the presence of such a body very obviously subserves the needs of a parasite which, as is now established, feeds ravenously on blood. Thus the hookworm's œsophagus acts as a sucker with a contractile rhythm which may run to 120 or even 250 pulsations a minute. When, by its active movements, the worm has pushed its mouth against the surface of a villus, this pumping mechanism is observed to fill the oral cavity and the œsophagus, first with intestinal epithelium and lymph, and then with blood. This blood the œsophagus passes on into the intestine, which in turn expels it in droplets per anum. By manœuvring the tails of hanging attached worms into the mouths of saline-filled pipettes, by counting a known fraction of the red corpuscles which were expelled into this fluid in a given time, and by comparing these with the numbers in the blood of the dog, Wells found that each female *A. caninum* wasted in this way an average of 0·84 c.cm. of blood daily. Now it is widely and emphatically maintained at the present time that a load of less than 25 hookworms is immaterial to man; yet on Wells's figures such a "light" load may imply a loss of half an ounce of blood daily, if these figures for this dog's hookworm can be applied to those of man. This he hesitates to do, in view of

[1] THE LANCET, 1930, ii., 1193.
[2] Jour. Parasitol., 1931, xvii., 167.

the general report that the stools of persons harbouring hookworms are not highly coloured, though he notes that there appears to be no means by which the amount of fæcal blood can be estimated, and that the conclusion that their colour shows that they do not contain blood is assumption. Some light was however thrown on this point by G. Duncan Whyte,[3] who reported 16 years ago from Swatow, China, that when there was rigorous abstention from meat for 72 hours (and meat must include cockles in this locality), evidence of blood could be obtained in fæces when fewer than 20 worms were afterwards recovered. The test used was an alkaline solution of phenolphthalein with hydrogen peroxide, and it was claimed that it would detect one part of blood in 800,000. Seeing that Looss reared *A. duodenale* to full growth in pups, it should be possible to resolve the doubts expressed by Wells as to whether these figures can be applied to the hookworms of man. Seeing the close resemblance in size and structure between *A. caninum* and *A. duodenale* it will be surprising if they cannot; but in the meantime few medical men will be disposed to question the wisdom of refusing to accept as immaterial to the host these "light" hookworm infections, particularly as the validity of the tests which have been held to exonerate them is not universally accepted.

Moreover in instances where the passage of blood through the gut of hookworms has been slow, by the time it reaches the anal end the hæmoglobin has been reduced, so that whatever constituent of blood is of most value to it as food the host's hæmoglobin serves to supply the hookworm with oxygen. Further, a hookworm deprived of blood by detaching it from the mucosa becomes very sluggish, and in the one instance investigated ceased to oviposit. Yet if when replaced it is still vigorous enough to start feeding it rapidly regains its normal activities. It is not unlikely, then, that unsatisfactory nutrition of the worms, due to that poor quality of the host's blood which is the usual accompaniment of a heavy infection, may be a factor in bringing about that lessening of individual fertility which, as Clayton Lane showed,[4] accompanied increase in the hookworm load in those cases where reports were full enough for this matter to be tested. These ingenious experiments have attacked the hookworm problem from a new and promising angle.

ELECTROCARDIOGRAPHIC DIAGNOSIS OF MYOCARDIAL INFARCTION.

THERE are certain changes in the electrocardiogram that are almost pathognomonic of myocardial infarction—namely, well-marked deviation and rounding of the R–T segment, associated with low voltage ventricular complexes, and as a later development the disappearance of the R–T changes and appearance of a V-shaped T wave, either upright or inverted, and often of considerable amplitude. But the time of appearance and disappearance of these changes is variable, and it is possible for a normal curve to be obtained from a patient with myocardial infarction at two stages of the process: first in the earliest stage, and secondly some time after its occurrence. C. W. Holland and S. A. Levine [5] have studied the time relations of the electrocardiographic changes in 328 cases of coronary occlusion. Only 35 of these gave tracings at any time which could be regarded as normal in all respects. Eight were normal in the first few days after the attack, and the authors record the persistence of a normal curve up to a maximum period of ten days. A second group of 19 cases consisted of those from which characteristic curves followed by normal ones were obtained; a return to normal in one of them within four days illustrates how fleeting the changes may be. Finally there were nine who gave no abnormal curves whatever, although multiple tracings were not always taken. From these and other observations we may conclude that the electrocardiogram is undoubtedly of first importance in the diagnosis of myocardial infarction, but like every other means of investigation cannot be relied on exclusively. If a tracing taken from a patient in the early stages of an attack which presents the clinical features of myocardial infarction proves to be normal this is not nearly as strong evidence against the diagnosis as two or more normal curves taken at intervals of two or three days. On the other hand the finding of a normal curve a month or more after an attack cannot be taken as evidence that this was not due to coronary occlusion.

[3] Ann. Trop. Med. Parasitol., 1916, x., 79.
[4] THE LANCET, 1930, i., 978.
[5] New Eng. Jour. of Med., March 17th, p. 545.

TUBERCULOUS MENINGITIS CURED BY DEEP X RAY THERAPY.

FROM time to time cases of tuberculous meningitis with recovery have been reported, but the total number is small and no satisfactory conclusions about the treatment of this terrible affection have hitherto been possible. Prof. Z. von Bókay,[1] of Debreczen in Hungary, now modestly reports success in five proved cases treated with deep X rays between May and August, 1931. It must be the first time that any one person has seen this number of recoveries and the results demand close scrutiny. The ages of the five patients were 12, 6, 4½, 3, and 3 years and the diagnoses were confirmed either by the finding of tubercle bacilli in the cerebro-spinal fluid or by the positive result of inoculating of the fluid into a guinea-pig. In one case, where bacilli had not been found in the fluid, recovery was so rapid after radiotherapy that the diagnosis of meningism was made, but five weeks later the post-mortem examination of an inoculated guinea-pig showed that the cerebrospinal fluid had been tuberculous. The irradiation employed is described as follows: 162 kilovolts, 4 milliamperes with 0·25 of zinc and up to 3 mm. of aluminium filter, 150–200 R. units with a focal distance of 34 cm. This was applied to the base of the neck, forehead, and temporal regions, the exact situation irradiated varying slightly. Three to four applications were made in each case, with one to two days between the first two, and three to four days between subsequent applications. Recovery, where it took place, seems always to have been complete, a noteworthy feature being the rapid gain in weight as the meningitic symptoms disappeared. Loss of hair appeared to be the only deleterious result of the irradiation and it is possible that the alopecia produced may be permanent, although in one case hair was beginning to grow again over the bald areas a few days after the child left hospital. A more serious possibility is the subsequent development of hydrocephalus or mental deficiency, and it is too soon to say whether Bókay's patients will escape these sequelæ. Moreover, during the months in which these five cases were treated successfully there were

[1] Jahrb. f. Kinderh., 1932, cxxxv., 69.

twelve similar cases in the hospital in which X rays failed completely. Discussing the question of what factors make for success Bókay emphasises the fact that from a pathological point of view, tuberculosis may be present either as a diffuse exudative process affecting all the meninges or as a local collection of tuberculous material in some portion of the meninges. The latter condition is closely allied to the "leaking tuberculoma" seen in older children and adults who have survived the presence of tubercle bacilli in the cerebro-spinal fluid; and many of the reported "cures" of tuberculous meningitis have been thought to come into this class. It is impossible to decide the exact pathological lesion in Bókay's cases, but the clinical details given in his paper leave little doubt that they were genuine examples of tuberculous meningitis. This, of course, is often part of a generalised miliary process throughout the body and, where this is so, cure within the skull cannot be expected to save the child. Nevertheless, whatever the pathological condition, the cause of death is an increasing intracranial pressure and Bókay's point is that if this can be arrested a step forward has been made. The dosage of X rays employed is very big, but in such a condition as tuberculous meningitis he holds that the *non nocere* principle can be justifiably abandoned and that intensive irradiation of the brain should be carried out without delay. There are many hundreds of fatal cases of tuberculous meningitis in this country every year, and there should be no difficulty in putting the new treatment to an early test.

NON-OPERATIVE TREATMENT OF SQUINT.

FOUR years ago [1] a new department was installed at the Royal Westminster Ophthalmic Hospital to deal with cases of incipient squint, and Mr. Montague L. Hine, in a recent paper,[2] gives a useful summary of the routine treatment as practised there. This treatment is directed to the ordinary cases of concomitant internal squint, not to the paralytic cases which are comparatively uncommon. The criterion for concomitancy is that the angle of deviation remains the same in whatever direction the eyes are looking. Its presence commonly depends on a defective fusion-sense or, as Mr. Hine expresses it, a defect in the degree of development of the inherent desire to use the eyes together, which is a normal instinct in mankind. Acting along with this there is often some upset of the normal relationship between accommodation and convergence or a measurable inequality between the refraction of the two eyes. These are the factors which can be remedied by spectacles. There may also be some lack of balance in the pull of the external muscles of the eyeball, not amounting to paralysis. Appropriate treatment depends on the age of the child. Under 18 months of age a squint, if only occasional, may be neglected; if constant, the fundus should be examined to exclude obvious causes of defective sight such as congenital coloboma or old scars of birth hæmorrhages. If it is concluded that the squinting eye ought to possess useful vision, an effort should be made to occlude the good eye for a time so as to avoid the amblyopia resulting from suppression of the image in the squinting eye. Over the age of 18 months it will be found possible in most cases for children to wear glasses when found desirable after retinoscopy under atropine. At this age small errors of astigmatism may be disregarded. When a squint is persistent and does not alternate, any further loss of vision may be prevented by continuing to occlude the fixing eye. In some cases atropine in the good eye may be sufficient to cause the originally squinting eye to fix.

For school-children who are being treated in the ordinary way by glasses and occlusion or atropinisation of the fixing eye, should this treatment prove insufficient the questions arise: for how long should the occlusion be continued? In cases where the squinting eye is nearly blind, if there is no improvement after a month either the occlusion has been inefficient or else the attempt to improve the vision of the squinting eye is hopeless; in other cases improvement may come after considerably more than a month. Should an operation be undertaken? If there is no approximation to binocular vision it is immaterial when an operation for advancement is performed, and in most cases it is better to wait till the child is old enough to have it performed under local and not general anæsthesia. Is it worth while to try stereoscopic training? If there is rudimentary binocular vision this may be considered, but it must be understood that it is somewhat tedious and cannot be easily carried out at home. At some hospitals special clinics have been established where specially constructed stereoscopes and "cheiroscopes" are adapted to the needs of particular children and used to train the power of binocular vision. The cheiroscope is an invention of Dr. E. E. Maddox, by means of which the child's interest is kept up by having to use his hand as well as his eyes. This sort of treatment has never been so systematically attempted as it is at the present day, but it is still in the experimental stage, and in most cases calls for a large number of visits to the clinic. Selected cases only are suitable, and the length of treatment necessary may be judged by the fact that whereas the number of patients treated in 12 months at the Westminster Hospital was 81, the total number of attendances was 3366. In some cases the treatment can best be carried out in conjunction with operation.

[1] See THE LANCET, 1929, ii., 673.
[2] Medical Officer, March 12th, 1932, p. 105.

HEALTH AND SOCIAL EVOLUTION.

FROM the Halley Stewart lectures for 1930 [1] by Sir George Newman we obtain a valuable survey of the development of our hygienic system. From 1738 to 1790 John Wesley went up and down this country with tireless industry and devotion. Neither before nor since has there been a man who taught so many people for so long. And in whatever theological mould he happened to cast his words, he taught them three things: that each individual must have a sense of personal social responsibility; that they must bear one another's burdens; and that no doctrine or belief is worth talking about which does not influence character and prescribe conduct. On a similar ground-work public health has evolved in this country. Such we take to be the text of the admirable sermons preached by a lively practical idealist as Halley Stewart lectures and they discharge excellently well the object of the trust which is "for research towards the Christian ideal in all social life." Sir George Newman gives a fine summary of the results which our hygienic system has achieved by that curious combination of exceptional individual effort and the growth of a sense of collective humanism which most great movements show. And he ends with the wise words of Lord Morley: "Progress depends on the room left by the State for the enterprise, energy, and initiative of the individual."

[1] London: George Allen and Unwin, Ltd. Pp. 200. 4s. 6d.

CHARLES DARWIN.

LAST Tuesday marked the fiftieth anniversary of the death of Charles Darwin. The mid-Victorian era was so gorgeously rich in the production of men of science whose work made history, that these anniversaries must now happen with considerable frequency, while such other anniversaries are claiming attention as birth centenaries or the centenaries or jubilee dates, not of the great discoverer, but of the great discovery. However pious the journalistic intention, it is clear that considerable restraint will have to be exercised in chronicling these numerous recurrencies, but in all scientific circles a personal note on Darwin, if topical, will always be justified. Darwin died on April 19th, 1882, at a ripe old age, twenty-three years after the publication of the work with which his name will always be associated, "The Origin of Species by Means of Natural Selection." The work owed its success to its intrinsic merits, to its carefully selected details, and its judiciously stated and temperate arguments. The logic of the conclusions in certain directions was challenged at the time, and new knowledge has placed certain of their implications in a different perspective, but he remains the typical man of science whose theories, entrenched behind a bulwark of facts, revolutionised much !ern thought; and he will be an everlasting example of devotion to learning.

AVERTIN IN THE TROPICS AND ELSEWHERE.

THE use of anæsthetics in the tropics is beset with difficulties peculiar to the atmospheric and the racial conditions in which they must be administered. It is asserted, for instance, that the evaporation rate of ether is so affected that one ounce which takes 20 minutes to evaporate at an English seaside resort in July takes, in similar conditions, 5 minutes in Bombay in the hot season and 11 minutes at Singapore. Writing from his experiences at Singapore Dr. A. Barnsley [1] states that ether from an open mask, although a far more effective anæsthetic in Malaya than in India, still suffers from the moisture with which the atmosphere is saturated. Chloroform he finds, in accordance with general experience, is attended with "an appalling relative mortality." Nitrous oxide and oxygen is not available except in the larger centres, and is here circumscribed in application because of its expense. To superstitious and uneducated people the ritual of inhalation anæsthesia is alarming, and Dr. Barnsley has welcomed the introduction of avertin into practice in the tropics. He believes that, "if used with reasonable care and in suitable cases, it will increase the efficiency of tropical surgery a hundredfold," and has found it highly satisfactory in his own experience. The fall of blood pressure which may occur under avertin influence has been subjected to careful observation by G. W. Taylor and C. C. Lund.[2] They find that usually the clinical state of the patient gives no intimation of the marked drop which may have taken place, the ratio of pulse pressure to diastolic pressure showing little alteration. Occasionally, however, the patient showed a weak rapid pulse, depressed shallow respirations, pallor, and cyanosis. In such cases the response to a single dose of ephedrine has been prompt, and there was no tendency for a second drop after its effect had worn off. Taylor and Lund conclude that the drop of blood pressure which they have observed is independent of surgical shock, because the venous oxygen figure in these cases is always within normal limits, and it has been shown that in shock the venous oxygen content is greatly reduced. It may be noted here that E. Desmarest,[3] of the Hôpital Ambroise-Paré in Paris, is much impressed by the value of the combination of avertin and nitrous oxide and oxygen, finding that the inhalation of the latter effectually combats the drop of blood pressure which may arise from the former. Also he maintains that any respiratory depression due to avertin injection is easily controlled with inhalation of nitrous oxide and oxygen, the oxygen being increased or curtailed in accordance with the patient's needs and carbon dioxide introduced with the inhalation when effective respiratory stimulation is required.

[1] Malayan Med. Jour., March, 1932, p. 1.
[2] New Eng. Jour. of Med., March 24th, p. 613.

THE SEMINAL VESICLES.

Two papers on the vesiculi seminales read at the annual meeting of the American Medical Association last year have now been published [4]—both of them contributed from the department of urology of the New York Post-graduate Medical School. The first, by J. F. McCarthy and J. S. Ritter, deals especially with the clinical aspect. The writers point out that in part of their course the two ejaculatory ducts are separated by no more than a very thin septum and so it has happened that the passage of a No. 4 ureteral catheter, followed by the injection of opaque medium, has resulted in a vesiculogram of the opposite side. The duct of the seminal vesicle is a direct continuation of the ejaculatory duct, whereas the ampulla of the vas is a tributary; thus a catheter may enter the former but not the latter. R. S. Roper [5] has indicated difficulties in catheterising the ejaculatory ducts, but McCarthy, since the introduction of his instrument in 1925, has found it possible to perform this operation in most cases. It will be recalled that a year ago Frank Kidd [6] reported that he had catheterised the ejaculatory ducts with this instrument in eight cases. Now that such catheterisation is possible vesiculograms can be taken, fluid from the vesicles uncontaminated by prostatic secretion can be obtained for examination, vesicular lavage can be carried out, and the ducts can be dilated in order to improve drainage. Kidd, however, believed that after some years' further experience it will be found that disinfection of the vesicles can be more readily and safely accomplished by Belfield's open vasotomy than by washing out the vesicles from below. McCarthy and Ritter have not noted any definite changes in the appearance of the vesicles referable to the various decades of life. On discussing the findings in 50 cases in which the vesicles were examined two interesting complications of enlargement of these structures are mentioned, one being ureteral obstruction giving rise to colic, and the other acute urinary retention. In taking vesiculograms the only complications, noted in a small proportion of cases, were subacute epididymitis, which rapidly subsided, and occasionally leakage of sodium iodide into surrounding structures, causing severe pain for a few minutes but no subsequent trouble. In the second paper, by J. A. Hyams, S. E. Kramer, and McCarthy, an important point brought out is the clinical difficulty of diagnosing chronic seminal

[3] Presse Méd., Feb. 17th, p. 257.
[4] Jour. Amer. Med. Assoc., Feb. 27th, pp. 687 and 691.
[5] THE LANCET, 1931, i., 793.
[6] Ibid., p. 864.

vesiculitis on rectal examination; for even with gross visual and tactile examination there is a striking difficulty in recognising a pathological specimen. The variations in the thickness of a vesicle appear to depend on functional and neurogenous factors rather than infiltrative lesions. The most reliable gross criteria of the probable presence of chronic seminal vesiculitis are found in the prostatic urethra. Of 66 specimens showing microscopical evidence of prostatitis, in 49 there was evidence of a greater or less degree of inflammation of the ejaculatory ducts, three showing no seminal vesiculitis, 30 showing slight indefinite chronic catarrhal seminal vesiculitis, and 16 showing marked chronic, subacute, and acute seminal vesiculitis. No considerable inflammation of the vesicles was seen in the absence of corresponding inflammation of the ejaculatory duct. The studies show that the ejaculatory ducts are always involved in posterior urethral inflammation, but this seldom results in chronic infiltrative change of the terminal portion of the duct and there is a diminishing tendency toward such involvement as the vesicles are approached.

THE PRIME MINISTER'S EYESIGHT.

IT is announced, through a bulletin signed by Sir Thomas Horder and Mr. Duke Elder, that the condition of the Prime Minister's right eye, which had improved after the rest which followed the operation upon the left eye, is not satisfactory. The normal advice would be that the patient should have a further complete respite from work, but Mr. Ramsay Macdonald's presence at Geneva has been sanctioned with the understanding that he is subjected to as little strain as possible and that three consecutive hours of every day should be given up to complete relaxation. The Prime Minister will be accompanied to Geneva by Sir Thomas Horder and Mr. Duke Elder, which is a wise procedure in the circumstances. A national call can justify the departure from what is the obviously prudent behaviour of a patient in the Premier's situation, but to have expert supervision during the period of trial is more than wise—it is a called-for precaution.

MEDICAL BATHS FOR THE PEOPLE.

THIS country has led the way in the public provision of cleansing baths. At a meeting of the Society of Medical Officers of Health held last week, Dr. R. Fortescue Fox showed how these municipal baths, especially in the cities, might be utilised for medical purposes. Many of them are, as he said, installed in very fine and commodious buildings and have an ample supply of hot and cold water; and while this may lack the unique value of natural medicinal water it should be possible to provide the more useful of the multifarious combinations of heat and movement that constitute the armamentarium of hydrotherapy. Such things, that is, as manipulation pools and baths; fango, in half baths and packs; vapour, with frictions and switchings; salt baths, and re-education. Many local authorities have compiled schemes for the provision of all or some of these measures, but in only quite a few progressive towns have establishments actually been founded. Medical baths are, of course, of little use except under skilled supervision, and—as Dr. G. R. Bruce stated at the same meeting—are only one link in a chain which includes accurate diagnosis, removal of focal infection, and other physical treatment. A municipality willing to provide efficient medical supervision might, Dr. Fox thinks, induce a young graduate interested in such work to specialise in it, allowing him perhaps a year's special training. As medical officer of a bath clinic he would not only supervise hydrotherapy but undertake scientific investigation into swimming and recreational bathing. Dr. Killick Millard, the President, remarked that local authorities had an excellent opportunity to provide rheumatism centres or bathing establishments in their recently acquired general hospitals.

INFANTILE CONVULSIONS.

ALTHOUGH it is recognised that convulsions are much commoner in infancy than at any other time of life, the reason for this is far from clear. It has been suggested that the unstable and immature nervous system of infants reacts in this extreme way to slight peripheral irritation, but this theory has obvious fallacies, one of which is that severe irritation is not accompanied by convulsions. A striking feature of the metabolism of infants, when compared with that of adults, is the lability of the calcium level of the blood, which is readily upset. Fever is known to affect the acid-base balance of the blood with consequent decrease in the ionic blood calcium. Dr. Stanley Graham [1] believes that convulsions in infancy—apart from organic nervous disease—are often if not always due to a lowering of the blood calcium resulting in increased irritability of the nervous system. On this theory he regards convulsions as a form of tetany, and in a study of the seasonal incidence of convulsions appearing at the onset of infections he finds that the incidence curve runs parallel with that of frank tetany, being highest in the dark winter months and falling in the summer. An obvious criticism of this is that infections of the respiratory tract, which are one of the commonest infections met with in infancy, are themselves more common during the winter. Although the convulsion itself appears to cause the disappearance of the usual signs of tetany, such as those described by Trousseau and Chvostek, Graham says that these signs may sometimes be found a day or two after the convulsion. In support of the theory Dr. Noah Morris [2] states that he has found a lowered blood calcium in many cases of infantile convulsions, even in the absence of any clinical or radiological evidence of rickets. At the same time it must be remembered that very low blood calcium values have been found in children who have never shown any convulsive tendency, which suggests that there must be also some other factor which influences the onset of convulsions. For the control of the actual convulsions Graham finds chloral hydrate in doses of grs. 2 to 4 by mouth or grs. 5 per rectum of the greatest benefit; its effect is rapid and lasts longer than that of chloroform. The dose may be repeated two-hourly if necessary and the treatment must not be stopped when the convulsions cease; instead, the quantity of chloral given should be gradually reduced, the intervals being lengthened until only gr. ½ is being taken twice a day. Having controlled the attack and excluded as far as possible any organic nervous disease one should give calcium chloride grs. 15 to 30 four-hourly for three days. This is said to cause a rapid rise in the blood calcium. It is important to prescribe the chloride and not the lactate, for its action is held to depend on its acid-producing property and not on the calcium. Cod-liver oil may also be administered with the idea of improving the absorption of calcium from the bowel.

[1] Glasgow Med. Jour., March, 1932, p. 113.
[2] Ibid., p. 126.

AN OPHTHALMIC DYNASTY.

THE death of Hermann Pagenstecher, at the age of 87, recalls a family that has become not only a German national institution, but almost a national industry, for Wiesbaden, where the Pagenstechers practise as ophthalmic surgeons, draws patients not only from Germany but from remote countries. The ophthalmic tradition of the family goes back to Karl Pagenstecher (1824–65), a general practitioner who made a great reputation as an oculist and shares with Donders the honour of describing ocular paralyses in diphtheria. But it was Alexander Pagenstecher who established the ascendancy of the family. An intensely practical man with exceptionally dexterous fingers, he rose rapidly in Wiesbaden where he settled in 1853, doing at first both general practice and ophthalmic work. He had laid a good basis for his work by studying under the great masters of the day; he had worked with Desmarres and Sichel in Paris, with Bowman and Critchett in London, and it was Graefe who had persuaded him to take up ophthalmology. Four years after settling in Wiesbaden he opened a small public clinic for eye diseases, and within a few years this had grown to a famous eye hospital which attracted as students men whose names later became household words in ophthalmology: Theodore Saemisch, Mandelstamm, Berlin, Iwanoff; and two members of the Pagenstecher family, Arnold and Hermann Pagenstecher, Alexander's brother, helped to increase the rising reputation of the hospital by a series of contributions published in the reports of the institution. The death of Alexander Pagenstecher in 1879, at the age of 51, from injuries received by the accidental discharge of a rifle, removed a figure that had become almost legendary. Endless stories of his skill were told and his name was known in every ophthalmic clinic owing to the remarkable vogue of an ointment that passed under his name—yellow oxide of mercury specially prepared for ophthalmic use to eliminate irritating by-products. Probably all the preparations of mercuric oxide used to-day are the descendants of Pagenstecher's ointment, though of course the substance itself has a great antiquity in medicine. The great practical achievement of Alexander Pagenstecher was, however, the elaboration, together with his brother and successor Hermann, of the intracapsular method of cataract extraction. This was, and still is, the only radical departure from the method of cataract extraction described by Daviel in 1751.

Hermann Pagenstecher, though no less a craftsman than his brother, had contributed more widely to ophthalmic literature, his chief contribution being an Atlas of Pathological Anatomy, published in 1875, of which he was a joint author. Sixteen years younger than Alexander, he directed the institution his brother had built up, till 1901 when his son Adolf took charge of it. But the call on his skill never abated. Queen Victoria and the Empress Frederick were amongst his distinguished clientèle. His beautiful hands and slender fingers seemed to perform miracles of operative skill. Heavily hit by the war and the subsequent financial collapse in Central Europe, he continued to practise, and even operate during the past few years. A man of great kindliness and simplicity he was dearly beloved by his patients, and the hardship of recent years was mitigated for him by a substantial sum collected from his English patients and friends by the late Mr. Howard Hodgkin and the late Lady Courtney. Arnold Pagenstecher (1837–1913), a pupil and nephew of Karl Pagenstecher, was another member of this family to carry on the ophthalmic tradition, whilst the work at Wiesbaden is still being continued by Adolf Pagenstecher, the present director of the Eye Hospital.

Ophthalmology has a remarkably large number of dynasties. Direct continuity of father and son occurs a number of times: Snellen, Coppez, Van Duyse, Fuchs, Landolt, Lagrange, von Scily, and Green abroad, Guthrie and Lang in this country, are examples of famous fathers and sons. The fathers must have been trebly blessed; they had sons after their own hearts—and hands and eyes.

A LAY ADMINISTRATIVE OFFICER.

THE Manchester city council has now confirmed the appointment of Mr. George Ogden to the newly created post of lay administrative officer. This post owes its establishment to the very great development of the work of the public health department during the past two or three years. The transfer of the poor-law medical services in itself has more than doubled this work—indeed, perhaps, trebled it from the administrative point of view. All the institutions as well as the hospitals are in the charge of the public health committee, which also controls the district medical service, vaccination, infant life protection, and all matters relating to hospital or medical work formerly carried out by the guardians. Before the transfer of the poor-law medical services, the hospital beds under the control of the committee numbered just over 1000, while now there are considerably over 9000. The new officer is appointed to deal with the lay administrative work for the whole of the department, subject to the medical officer of health. He is entrusted as part of his duties with the special duty of supervising expenditure at, and in connexion with, the various hospitals and institutions, and of advising the medical officer from time to time on economies which it might be possible to bring about. It is particularly hoped that this administrative supervision will effect definite economies in the purchase of food and materials of all kinds, and will further improve the efficiency in the lay staffing of the department, more especially in the larger establishments. There is no doubt, in the opinion of the medical officer of health, that this appointment is a step in the right direction, since much of his time in the past has been taken up by matters which ought to be easily and effectively decided by an officer of the type now appointed. He will thus be left freer for the consideration of administrative policy and development and for the study of those problems which are most important in the application of preventive medicine.

Mr. Ogden, who is 43 years of age, has hitherto been principal administrative clerk in the Manchester public health department. His appointment carries a salary of £1000 a year.

Sir William Watson Cheyne, who has died on April 19th, in his eightieth year, was a great figure from the time when he became Lister's prominent lieutenant in the revolution of surgery. He held the chair of surgery in King's College, London, was President of the Royal College of Surgeons of England, an F.R.S., and surgeon in ordinary to the King. For a period he represented Scottish universities in the House of Commons.

SPECIAL ARTICLES

THE MINIMUM COST OF PHYSIOLOGICALLY ADEQUATE DIETS FOR WORKING-CLASS FAMILIES.

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IMPORTANCE OF PROPER NUTRITION.

There is good reason to believe that proper nutrition is the most important condition for the maintenance of health and efficiency. Food is the primary factor which determines the state of nutrition of men, women, and children. Hence it is of paramount importance to the national health that expenditure on items other than food in family budgets should not render it impossible for families with small fixed incomes per week to provide out of income an adequate diet for the family.

The terrible consequences to national health resulting from food shortage and improper food were evident in Germany in the later stages of and immediately after the war, as reported on by Prof. Starling in 1919.[1] To-day, in England, individual families may suffer just as much owing to unsound family economics and bad household management, coupled with a lack of knowledge of what constitutes an adequate, well-balanced diet.

As in Germany during and after the war it was not the "breadwinner" who suffered most, so too to-day the mother and the children are the ones mainly affected. If it were not for the many voluntary aid organisations, the existence of malnutrition would be much more in evidence. Even so, the figures for 1930[2] published by the Chief Medical Officer to the Board of Education reveal the fact that in 2,739,297 medical inspections of children of school age, 29,876 children were found to be suffering from malnutrition.

Table I.—*Expenditure Per Man-value Per Week.*

Notes.	Food.	Rent.	Clothing.	Fuel.	Other items.	Total all items.
Board of Trade, 1904, distribution of weekly expenditure in working-class families ..	60%	16%	12%	8%	4%	100
Ministry of Labour indices of cost for January, 1932; 1914 prices taken as 100	131	154	190	175	175	147
Distribution of weekly expenditure January, 1932; 1904 figures corrected for 1932 indices of cost..	53%	17%	16%	9%	5%	100
Weekly budget based on 7/- January, 1932, cost of adequate food per man-value per week	7/-	2/2	2/0½	1/3	7½	13/1

MINIMUM COST OF PROPER FOOD PER WEEK.

Information has been collected from various sources in order to determine the minimum cost of providing an adequate, well-balanced, varied, and physiologically sound diet per unit man-value per week, and, with this figure as a basis, the minimum cost of adequate food per week for families of varying size has been calculated. The sum of 7/- per week per man-value appears to be the absolute minimum of expenditure on food under the best possible conditions of household management and economic purchasing by the mother at the present time.

The Board of Trade inquiry in 1904 furnished data in regard to the distribution of expenditure between the various items which make up the weekly budgets of working-class families. The Cost of Living Index[3] is calculated on this distribution of the weekly income using the 1914 prices of commodities as the basis. Table I. shows the weekly expenditure per unit man-value as calculated from the Cost of Living figures for January, 1932, published by the Ministry of Labour.[4]

WEEKLY BUDGETS.

Table II. shows the weekly budgets of families of man-value 1·5 to 4·5. This table gives figures for the minimum cost of adequate food for such families based on the rate of 7/- per man-value per week. The expenditure on rent and other items in the weekly budget is calculated from the Cost of Living indices and the Board of Trade figures for the distribution of family expenditure shown in Table I.

Table II.—*Family Budgets Based on the Cost of Living Data of the Ministry of Labour and the Minimum Cost of Adequate Food at January, 1932, Price Levels.*

Family man-value.	Minimum cost of food per week.	Rent.	Clothing.	Fuel.	Other items.	Minimum weekly income per family.
1·5	10/6	3/3	3/0½	1/10½	11½	19/7½
2	14/-	4/4	4/1	2/6	1/3	26/2
2·5	17/6	5/5	5/1½	3/1½	1/6½	32/8½
3	21/0	6/6	6/1½	3/9	1/10½	39/3
3·5	24/6	7/7	7/1½	4/4½	2/2½	45/9½
4	28/0	8/8	8/2	5/0	2/6	52/4
4·5	31/6	9/9	9/2½	5/7½	2/9½	58/10½

The right-hand column in Table II. gives what appears to be the minimum weekly income which these families need at the present time, assuming that the basis on which the present Cost of Living Index is calculated is a sound one. On the other hand, if the present-day standard of living demands that a substantially greater percentage of working-class family income shall be spent on rent than it did in 1904, then these minimum weekly income figures are too small, while the amount which needs must be spent on food remains the same, for it is based on the physiological needs per man-value and current retail prices.

Owing to collective agreements for the periodical adjustment of wage rates in accordance with the variations in the Cost of Living Index figure, the data published by the Ministry of Labour do affect the incomes of a large number of working-class families, hence it is reasonable to compare actual present-day family budgets with the theoretically economic budgets calculated from such data and shown in Table II.

EXPENDITURE ON RENT.

In a number of family budgets examined by Miss M. L. Clark and Miss M. Hetherington, the proportion of weekly income spent on rent is widely different from 17 per cent., and the expenditure on rent alone, which presumably must be paid, renders it absolutely impossible for some of these families to purchase a physiologically adequate diet even on the basis of the minimum figure of 7/- per man-value per week for food. This figure of 7/- per man-value per week presupposes the most economic purchasing and household management by the mother in the family—an assumption which is rarely justified.

Schedule A shows that an adequate well-mixed diet can be purchased at the cost of approximately 7/– per man-value per week. The list of foodstuffs was compiled by the Mothers' Committee of the North Islington Welfare Centre in July, 1929, when the index for food stood at 150. The cost of food per unit man-value per week at that time was 8/2½. By January, 1932, the index for the cost of food had fallen to 131, which reduces the weekly cost per man-value to approximately 7/–.

The quantities of food purchased for the week according to this schedule are for a family of man, wife, and three children, aged, 8, 6, and 3, which according to the Cathcart scale [5] of Family Coefficients shown in Table III. has an equivalent man-value of 3·53.

TABLE III.—*Family Coefficients (Cathcart Scale).*

Man	1·00	Child, 8–10 (9 11/12ths.)	0·7
Woman	0·83	„ 6– 8 (7 11/12ths.)	0·6
Boy, 14+	1·00	„ 3– 6 (5 11/12ths.)	0·5
Girl, 14+	0·83	„ 2– 3 (2 11/12ths.)	0·4
Child, 12–14 (13 11/12ths.)	0·9	„ 1– 2 (1 11/12ths.)	0·3
„ 10–12 (11 11/12ths.)	0·8	„ 0– 1 (11/12ths.) ..	0·2

The dietary is varied, well balanced, adequate in calories, and includes a sufficiency of vitamin-containing foodstuffs, fresh milk, butter, vegetables, and fruits. In calories and proportion of protein, fat, and carbohydrate this dietary is very similar to the diet for the average man adopted by the Royal Society Food (War) Committee.[6]

LONDON FAMILY BUDGETS.

Schedule B gives a few examples of family budgets collected in London, together with the theoretically economic budget for each family according to the man-value as calculated from Table II.

In the case of Family No. 1, the man was a sailor and did not live at home, but allowed his wife 32/6 per week to keep herself and three children, aged 10, 6, and 5, having a man-value of 2·73. At 7/– per man-value per week this family needed 19/1 for food alone, yet they were committed to a weekly rent of

SCHEDULE A.—*Weekly Dietary for Family: Man, Wife, Three Children, Aged 8, 6, and 3. Daily Man-value 3·53. Weekly Man-value 24·71.*

—	Weight foodstuff per week.	In grammes. Carbohydrate.	Protein.	Fat.	Calories.
Beef ..	5 lb.	—	333·5	442·5	5480
Rabbit ..	2 lb.	0·8	113·4	40·8	848
Suet ..	1 lb.	—	5·4	423·2	3958
Fish (white)	3 lb.	—	194·4	70·2	1452
Cheese ..	¾ lb.	10·6	87·5	119·1	1508·25
Eggs ..	1 lb.	4·7	37·7	34·4	494·25
Milk ..	22 pts.	598·4	411·4	448·8	8316·0
Butter ..	1 lb.	—	0·9	376·5	3503
Lard ..	¼ lb.	—	—	226·8	2109·5
Dripping ..	1 lb.	—	—	453·6	4219
Flour ..	3 lb.	1007·1	172·8	18·9	5016
Bread ..	26 lb.	5673·2	850·2	23·4	26962
Cornflour ..	¼ lb.	99·3	0·9	0·1	412
Oatmeal ..	3 lb.	952·5	162·0	117·0	5658
Rice ..	1 lb.	362·9	30·8	2·7	1640
Peas ..	1¼ lb.	428·7	138·2	4·8	2368·5
Sugar ..	3 lb.	1360·8	—	—	5580·0
Cocoa ..	¼ lb.	45·7	20·5	30·4	553·8
Jam ..	2 lb.	629·6	2·8	—	2592·0
Cabbage ..	3 lb.	85·8	19·8	1·35	437
Turnips ..	1 lb.	20·0	5·4	0·45	108
Carrots ..	1 lb.	43·6	5·4	0·45	205
Lettuce ..	¼ lb.	2·3	1·1	0·2	21
Potatoes ..	9 lb.	775·8	67·5	1·8	3555
Apples ..	2 lb.	88·8	2·6	1·8	392
Oranges ..	1 lb.	29·9	2·7	0·4	137
Prunes ..	1 lb.	153·8	11·3	0·9	685
Weekly totals for family		12374·3	2678·2	2839·6	88210·0

—	Carbohydrate.	Protein.	Fat.	Calories per man-value per day.
Proportion per day per man-value	500·8 g.	108·4 g.	114·9 g.	3570
Percentage calories ..	58	12	30	—

Total cost per week January, 1932. } 25·3/– = { 1·02/– per man-value per day, or 7/2 per man-value per week.

SCHEDULE B.

Family composition.	Family man-value.	Weekly budget.	Food.	Rent.	Clothing.	Fuel.	Other items.	Income.	Notes.
Family 1.—									
Man ..	2·73	Actual	13/9	13/6	—	4/6½	2/0½	32/6	Debt 1/4
Wife ..		Theoretical	19/1	5/11	5/7	3/5	1/9	35/9	
Child, 10		Difference	−5/4	+7/7	−5/7	+1/1½	+3½	−3/3	Debt 1/4
„ 6		Per cent. Difference	−28%	+128%	−100%	+33%	+17%	−9%	
„ 5		Per cent. Distribution, actual	42·3	41·5	—	14·0	6·3	—	Debt 4·1%
		„ theoretical	53·0	17·0	16·0	9·0	5·0	—	
Family 2.—									
Man ..	2·93	Actual	22/2	13/6	—	—	—	30/–	Debt 5/8
Wife ..		Theoretical	20/6	6/4	6/–	3/8	1/10	38/4	
Child, 9		Difference	+1/8	+7/2	−6/–	−3/8	−1/10	−8/4	Debt 5/8
„ 2		Per cent. Difference	+8%	+113%	−100%	−100%	−100%	−22%	
		Per cent. Distribution, actual	73·9	45·0	—	—	—	—	Debt 18·9%
		„ theoretical	53·0	17·0	16·0	9·0	5·0	—	
Family 3.*—									
Man ..	3·03	Actual	11/3	10/–	2/–	5/–	6/6½	35/–	Illness, med.
Wife ..		Theoretical	21/2½	6/7	6/2	3/9½	1/11	39/8	Extra fuel.
Child, 7		Difference	−9/11½	+3/5	−4/2	+1/2½	+4/7½	−4/8	Surplus of 2½
„ 6		Per cent. Difference	−47%	+52%	−58%	+32%	+242%	−12%	
		Per cent. Distribution, actual	32·1%	28·6	5·7	14·3	18·9	—	Surplus 0·4%
		„ theoretical	53·0	17·0	16·0	9·0	5·0	—	
Family 3.†—									
Man ..	3·03	Actual	12/11	10/–	—	1/–	4/11½	27/3	Debt 1/7½
Wife ..		Theoretical	21/2½	6/7	6/2	3/9½	1/11	39/8	
Child, 7		Difference	−8/3½	+3/5	−6/2	−2/9½	+3/0½	−12/5	
„ 6		Per cent. Difference	−39%	+52%	−100%	−74%	+159%	−31%	
		Per cent. Distribution, actual	47·4	36·6	—	3·7	18·3	—	Debt 6·2%
		„ theoretical	53·0	17·0	16·0	9·0	5·0	—	
Family 4.—									
Man ..	3·33	Actual	24/3	11/–	—	4/9	3/7	46/0	Surplus 2/5
Wife ..		Theoretical	23/4	7/3	6/9	4/2	2/1	43/7	
Child, 11		Difference	+11	+3/9	−6/9	+7	+1/6	+2/5	
„ 9		Per cent. Difference	+5%	+52%	−100%	+14%	+72%	+6%	
		Per cent. Distribution, actual	52·7	23·9	—	10·3	7·8	—	Surplus 5·3
		„ theoretical	53·0	17·0	16·0	9·0	5·0	—	

* Employed; † unemployed. Med.= medicines.

13/6, which left 19/– to cover food, clothing, fuel, and other items, such as washing and cleaning. This family, according to the scale shown in Table II., should have paid 5/11 for rent instead of 13/6, and was spending 41·5 per cent. of the weekly income on rent as compared with 17 per cent., which presumably is a fair proportion for a family of this status. The expenditure on food was 28 per cent. less than that necessary to purchase a physiologically adequate dietary.

In Family No. 2 the man was a casual labourer in the docks, earning 30/– per week. The rent paid was 13/6, which left 16/6 for the family for the week, although according to the man-value of 2·93, 20/6 was the minimum amount necessary for food alone. The family spent nothing on fuel, clothes, or other items, and was in debt 5/8 at the end of the week. Such a man could not possibly do his heavy muscular work without adequate food, and the expenditure of 45 per cent. of his weekly income on rent made debt inevitable.

Two budgets are shown for Family No. 3, the first when the man was employed and the second when he was on unemployment relief. The rent of 10/– was 52 per cent. more than this family could afford, and the money spent on food was 47 per cent. less than the minimum necessary expenditure. I understand that the wife has now broken down in health.

Family No. 4 shows a more satisfactory budget. The expenditure on food is substantially the amount theoretically essential according to the scale shown in Table II. Rent represents 23·9 per cent. of the weekly income, as compared with 17 per cent. calculated on the Cost of Living data, but this expenditure on rent is reasonable, for in this family it did not entail the cutting down of essential expenditure on food.

The number of family budgets quoted in Schedule B is, of course, too small from which to draw any general conclusions, but in so far as they are the actual budgets of working-class families in receipt of very limited incomes, it is worthy of note that the mean weekly expenditure on rent amounted to 34·7 per cent. of the total weekly income, or twice the percentage of 17, on which the Ministry of Labour bases its present calculation of the Cost of Living Index.

If a family undertakes such a fixed weekly commitment as rent, and then finds by bitter experience that insufficient money is left for the provision of adequate food, on the physiological minimum basis of 7/– per man-value per week, it is inevitable that debt or breakdown in health or both will follow.

EDUCATIONAL AND ADMINISTRATIVE ACTION.

It appears, therefore, that some educational and administrative action should be taken to prevent such family misfortunes, or at least warn the working-class public against such probabilities. There is little doubt that welfare and social workers could interest mothers in family budgets if they had at their disposal such data as shown in Table II. above. They could easily work out the minimum cost of food per family per week and tell the mother what money she should set aside for the purpose, and what amount should reasonably be allowed for rent and other items, but it must be made quite clear that food must be the first consideration in deciding whether any increased fixed weekly commitment, such as the rent of a new house, is justified.

I feel sure that some administrative measures are also desirable because families may be anxious to take new houses, and be allowed to commit themselves to weekly rentals or instalments which render the proper feeding of the family an economic impossibility.

The need for proper food and the minimum cost of adequate food should be clearly understood. Whatever may be the urgency for housing undertakings paying their way, it is in bad business from the national health point of view if such can only be achieved at the expense of family health.

Officials, whose duty it is to let council or other dwellings, should be conversant with some such scale as Table II., and on inquiry from a prospective tenant as to his weekly income and size of family, be prepared to say whether or not such a fixed weekly commitment as the rent or instalment on the particular dwelling is justified. It should be the recognised duty of such an official to refuse to let a dwelling unless he is satisfied that the weekly rental will not make it impossible for the family to purchase adequate food on the basis of 7/– per man-value per week. Moreover, sufficient money to cover reasonable expenditure on other items such as clothes and fuel must remain after deducting the cost of food and rent from the weekly income.

No doubt further inquiry in London and elsewhere will be needed before the necessary measures can be taken, but in the interests of the health of the working-class community it is essential that such inquiries should be followed by educational and administrative action.

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MEDICINE AND THE LAW.

Unregistered Practitioner and Death Certification.

"WHAT exactly does this registration as a medical practitioner mean?" The asking of this question by the foreman of a coroner's jury shows how widespread is the popular ignorance as to the relative powers and qualifications of registered and unregistered practitioners.

The Craven coroner, Mr. E. Wood, was holding an inquest at Barnoldswick, Lancs, in a case where, the deceased having been attended by an unregistered practitioner, no death certificate was forthcoming. The deceased, a woman 40 years of age, was attended last November by a registered practitioner, Dr. J. W. Pickard. On Feb. 12th, being ill again, she called in an unregistered doctor practising at Preston. He visited her again on the 17th and 19th; on this last date the patient's husband decided to call in Dr. Pickard again; the unregistered doctor was informed of the intention and apparently approved. Dr. Pickard attended the patient on the 19th and found her very weak, "having a certain amount of pyrexia and seeming to be very dazed." He called again on the 21st; according to the husband, Dr. Pickard did not then see the patient as she was asleep; he told the husband that, if the unregistered doctor was going to attend the patient, he could not himself do so. The unregistered doctor attended her on the

20th and 21st; on the 22nd she died. Asked by the coroner at the inquest to express an opinion as to the cause of death, Dr. Pickard said that, having heard the reports of the county analyst (who had analysed the medicines administered to the patient) and of the county pathologist, he was prepared to suggest the cause as "heart failure resulting from exhaustion due to menopausal mania." He did not think her life could have been saved. The foreman of the jury asked Dr. Pickard whether he would have given a death certificate if he had known that a local doctor had been called in. The witness replied, "if I had known sufficient of her and what medicine she had been given, I should have been able to give a certificate; as I understand the law, I should not have been entitled to give a certificate knowing that she had been attended by an unregistered practitioner." It was at this point that the foreman asked his question about the meaning of registration. Dr. Pickard, in answer, briefly explained the system of medical education, qualification, and registration under the supervision of the General Medical Council.

Earlier in the proceedings the husband had stated that his wife had special confidence in the unregistered doctor and would not have called anyone else in had he always been available. The coroner explained that, however able this doctor might be, he could not issue a death certificate; "the public must understand that in the event of death an inquiry must take place." No registered practitioner, the coroner added, will attend a patient if he knows that an unregistered doctor is called in. "I am not holding a brief for either side, but Dr. Pickard would not have been justified in giving a death certificate in this case." These proceedings will have given useful publicity to one of the very few disabilities of the unregistered doctor, namely, his inability to sign a death certificate. There is no reason to suppose that the public, when the point is appreciated, would desire the law to be changed.

Tobacco Blindness.

At the Liverpool Assizes lately an acetylene welder sued his former employers for damages for personal injuries alleged to be caused by their negligence or breach of duty. The plaintiff complained that he suffered from nicotine poisoning as a result of welding plates on to moulds which had been used in tobacco factories and that his eyesight was temporarily affected. In support of the claim a civil engineer stated that in rewelding the tobacco moulds the application of an oxyacetylene welder would volatilise the nicotine and produce noxious fumes. The defendants contended that the tobacco blindness was due to excessive smoking and had nothing to do with the man's employment.

The jury awarded the plaintiff £35, a result with which Mr. Justice Charles said he profoundly disagreed. He deferred judgment in order to consider which scale of costs should be allowed, but subsequently he awarded costs on the High Court scale. The defendants, he said, had treated the claim from the beginning as a matter of importance and dealt with it as a High Court case, calling witnesses of high distinction in support of their contention. Presumably the learned judge meant that this course committed the plaintiff to corresponding effort, but it seems hard that the defendants should be penalised for having obtained expert assistance in resisting a claim with which the judge himself clearly had little sympathy.

PHYSICAL MEDICINE AND RADIOLOGY:

A JOINT CELEBRATION.

A COMBINED dinner of the Sections of Physical Medicine and Radiology of the Royal Society of Medicine was held at Claridge's Hotel, London, on Friday, April 15th. The dinner was in celebration of the formation of these two sections last autumn, and the chair was taken in dual form by Dr. F. G. Thomson, President of the Section of Physical Medicine, and Prof. J. M. Woodburn Morison, President of the Section of Radiology. The guests of honour were Dr. T. Watts Eden, President of the Society, and Sir Robert Jones, who had delivered an address (reported on p. 885 of this issue) to the Section of Physical Medicine at its meeting earlier in the evening.

The health of the two sections was proposed by Dr. WATTS EDEN, who said that, as they had come into existence during his presidency, he stood to them in loco parentis. If he could more appropriately be regarded as having presided over their birth, he liked to remember that the word "obstetrician" meant by derivation "one who stood by"—often enough until the morning! He had never known an affair of twins proceed more smoothly and expeditiously or with less anxiety to the official watcher. The new sections owed much to the wise and unobtrusive leadership of the two presidents and to the spirit of mutual coöperation manifested both by the Council and by the general body of members of the old sections, who had not hesitated to scrap the "old bottles" when it had become obvious that they would not hold the "new wine." He entertained the most optimistic view of the prospects of the new sections. Physical medicine was a time-honoured branch of medical work—witness the balneological treatment at Bethesda—while radiology was the bright young thing of modern medicine. The present seemed to him a particularly favourable opportunity for the apostles of physical methods of treatment. We lived in a drug-ridden age and, while physical medicine did not exactly advise us to "throw physic to the dogs," it did undertake the all-important mission of proclaiming the healing virtues which resided in Nature. The most striking thing about radiology was the phenomenal rapidity of its growth. In radiophotography were fulfilled the prophetic words: "There is nothing covered that shall not be revealed." It was hardly too much to say that radiology now held almost the whole field of medicine and surgery in fee, save perhaps, psychiatry—and everyone would hope that radiologists would stop short of revealing the emotions. He submitted that the position of radium and X rays as therapeutic agents had yet to be determined, and assumed that the position of radiotherapeutics would be one of the chief preoccupations of the new section. And he reminded the audience that the triumphant march of radiology has been secured at the cost of the lives of men who had counted those lives as of little worth in comparison with the advancement of their science.

Prof. WOODBURN MORISON, in reply, welcomed the steady progress made in physical medicine and radiology and the full recognition accorded by the Royal Society of Medicine to the changes that had resulted. The two new sections had much in common, and already they ranked twelfth and thirteenth, in the strength of their membership, among the 25

sections. Treatment by physical methods was as old as mankind, while radiology had a history of but thirty-seven years. He dreamed of the day when practitioners in both branches of medicine would have full opportunity of advancing their work by clinical teaching, perhaps even in special hospitals. The object of the two sections was to promote intensive study, and progress was best achieved through clinical teaching.

The health of the guests was proposed by Dr. THOMSON, who stressed the part played and the influence exerted by Dr. Watts Eden in promoting the smooth and uneventful arrival of the two new sections. His attitude throughout had been characterised by the kindly solicitude and confident optimism which were valuable assets on anxious occasions. The name of Sir Robert Jones was known all over the world, and largely owing to his achievements and energy the science of orthopædics had been raised from being the happy hunting-ground of uneducated bone-setters to what was perhaps the most progressive branch of surgery to-day. Mr. Edwards, the Secretary of the Society, had been guide, philosopher, and friend, and might be described as the "silent gear-box" of the Society—and a preselective gear at that. Finally, Dr. Thomson welcomed the presence at the dinner of so many ladies, who were naturally attracted by sections still in their infancy.

Sir ROBERT JONES, in reply, wished every success to the two new sections and the Society and was confident that in giving his good wishes he was betting on a certainty. As he understood that a jazz-band in the near vicinity was whetting its instruments of torture, and as he firmly believed in scientific manipulation of the limbs for the development of the health of the body, he declined to keep them any longer from health-giving exercise.

A large number of the guests then went to the ball-room placed at their disposal by the management.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

WORK OF THE LOCAL APPOINTMENTS COMMISSION.

IT will be remembered that under the authority of the Local Authorities (Officers and Employees) Act, 1926, local authorities are bound to appoint to offices in their service only such persons as have been recommended to them for the purpose by a central body, the Appointments Commission. In each case the Appointments Commission nominates the person to be appointed, so that in effect the appointments rest with the Commission and not with the local authorities. The Commission normally acts on the advice of a selection board, which is made up ad hoc for each appointment or group of appointments of a similar nature, of persons with special knowledge of the duties to be performed. As regards medical appointments it is recognised by everyone that the quality of the candidates for such offices as that of dispensary medical officer has materially improved since the present system was established. Whereas candidates formerly were wont to rely mainly on their local and family influences, they now recognise that qualifications and evidence of experience are more important. As a result, the public medical services are attracting a better class of candidates than formerly. In 1928, after some two years' experience of the working of the Act, the Dáil nominated a select committee to inquire and report whether any amendment of the Act was desirable. In February, 1930, the committee submitted its report, which contained several recommendations; some suggesting minor amendments of the Act, and others merely changes in procedure. The recommendations had the general approval of the medical profession, and some disappointment has been caused by the fact that no action was taken on the report. With a change of Government it is hoped that the report may now receive consideration. A rumour, however, is being circulated in the press to the effect that the present Government are considering altering the Act in an important particular. It is said that it is proposed to provide that the Appointments Commission should forward three names instead of one in each case to the local authority, the final choice to rest with the latter. Medical opinion is definitely against such a proposal, which is regarded as retrograde. It is pointed out that the local authority is not competent, as are the selection board, to estimate the value of professional qualifications and experience, and in so far as a local authority exercises any choice it is likely to be influenced by considerations which should be extraneous. Moreover, the general tendency of all the reforms in the public medical services in recent years has been toward centralisation, and toward making a transition to a State service easy. To restore the power which was taken from the local authorities six years ago is a reversal of this tendency.

HONORARY FELLOWS OF THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

Last Saturday evening the two recently elected honorary Fellows of the Royal College of Physicians of Ireland were admitted to the College by the President, Prof. T. G. Moorhead. They are Sir Almroth Wright, F.R.S., and Mr. Edward Stephenson, chief medical adviser to the Department of Local Government and Public Health of the Irish Free State. After the ceremony of admission the President of the College, who is also President of the Royal Academy of Medicine in Ireland, entertained a large number of the Fellows of both bodies and several distinguished guests to dinner.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified: Surg. Lt.-Cmdr. H. W. Strong to *Pembroke* for Gt. Yarmouth Hospital. Surg. Lts. G. A. Miller to *Stuart* and *Kempenfelt*; J. G. Currie to *Rodney*; E. H. Rampling to *Renown*; W. W. Simkins to *Douglas*; and F. W. A. Fosbery to *Ladybird*.

Surg. Lt.-Comdrs. (D). F. W. Watt to *Malaya* and T. Hunt to *Effingham II.*; Surg. Lt. (D). F. J. Goldsworthy to *Ganges*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. W. F. Lascelles to be Surg. Lt.-Comdr.

R.A.M.C.: TERRITORIAL ARMY.

Lt. A. A. Eagger to be Capt.

Supernumerary for service with the O.T.C.—Maj. C. H. Budd to be Lt.-Col., and to comd. the Med. Unit, Cambridge Univ. Contgt., Sen. Div., O.T.C.

INDIAN MEDICAL SERVICE.

Capt. G. C. Phipps, from R.A.M.C., with seniority, to be Capt.

Lt.-Col. S. W. Jones retires.

R.A.F. RESERVE OF AIR FORCE OFFICERS.

Flight-Lt. J. J. Clarke is transferred from Class D (ii) to D (i).

CORRESPONDENCE

ECONOMY IN THE PUBLIC HEALTH SERVICES.

To the Editor of THE LANCET.

SIR,—There can be few in the medical profession who do not think that the national spirit of extravavagance, now generally admitted, exists in some degree in branches of our social services. There is a tendency for luxuries to be classed as necessities for the public health, and my feeling is that much expenditure might be saved without the public welfare suffering. May I suggest some lines on which economy might be exercised. I will deal first with economy in administration, and then with economy in public health institutions.

In my experience of medical and health administration in peace and war, extending over 20 years or more, I have found a constant tendency (of myself and others) to over-staff. He who desires a reputation for efficiency will staff his office for the maximum amount of work at any period of the year, rather than for the average; not an unnatural tendency, as it contributes to efficiency at all times, freedom from errors, punctuality in returns, and peace in the office. If, however, a compulsory reduction is made, it is often surprising how little reduction in efficiency is noticeable. Reports a shade less elaborate, a little extra work, a little overtime at certain periods, a little less comfort for everybody—but the work is done. That a layman, or committee of laymen, is capable of estimating what the staff should be is, I think, seldom possible. It requires a medical man with experience. Yet it is my experience that the specialist or expert carrying out the duties at the time is not the person who should have the final word as to the number of his staff. In this respect in the Army the arrangements are good, for every specialist has his immediate chief, possibly not an expert but experienced. He can view the specialist's probably not unprejudiced requests with an independent eye and a due sense of proportion. Two other tendencies, which I need not elaborate, contribute to overstaffing: the first is sitting at a desk when one should be visiting the area; the other, the issue of too elaborate returns. Experience, especially in war-time, has shown me that to obtain good results it is not always necessary to have the most expensive apparatus or to follow the most expensive methods. To give a single example, it does not require a large fixed bath to make a man clean, a small tin one would do this as well. I have learnt not to confuse health necessities with luxuries and comforts.

Of institutions I do not claim to have more personal experience than comes to most members of the profession. The opinion of general practitioners on some of them would be instructive. What do they feel about the value of health visitors as a public health institution; does the public get full value for the money spent? And then school medical work; might it not be more practical and possibly less expensive to utilise the general practitioner who is the family doctor as well. At present the school medical officer only sees children at school and rarely when ill; the practitioner does not see them at school and rarely when well? Would not a system by which the children's parents render special certificates drawn up by their own doctor at fixed periods answer as well or better? Take infant welfare centres. At one period when in the Army I had the supervision of several of these. The actual amount allowed for expenditure in a centre was £5 a year; medical officer, nurse (if available), and accommodation cost nothing. A medical inspection room was utilised; failing that, a disused barrack room. Comparison with the expense of civil centres is therefore difficult. Although the comfort of the medical officer may have suffered to some extent by lack of accessories, I doubt if they affected the success of the centre. The personality and ability of the medical officer was indeed the chief factor. It is possible that sometimes the comfort of the staff is overdone; this is not a noticeable failing in the Army.

These are a few of the lines on which economy might be exercised; some others have been mentioned previously in your columns.[1] I do not think that they are exhausted. It may be asked whether there is any constructive idea in my mind. I consider that the medical profession as a whole has not enough share in the administration of public health, apart from the executive work. Laymen are fond of dabbling in public health, some with success, others for various reasons run amuck. Municipalities and county councils in their public health work should be well leavened with general practitioners, whose knowledge, experience, and practical acquaintance with many of the problems arising should make them efficient in checking unnecessary expenditure. Their help too would be invaluable to the health medical officer. But they stand aloof from public health administration.

I am, Sir, yours faithfully,
W. F. TYNDALE, M.D. Lond., D.P.H.

Bishopthorpe, York, April 18th, 1932.

PULMONARY TUBERCULOSIS IN CHILDHOOD.

To the Editor of THE LANCET.

SIR,—It is a pity that Dr. Collis in your issue of April 9th did not explain his point in greater detail. The matter really is one of considerable interest. My article dealt with pulmonary tuberculosis only, and I stated that this disease, associated with tubercle bacilli in the sputum, was rare in children. I also said that this combination was a grave one, few such sufferers surviving at the end of five years. I quoted figures. May I repeat that in the year 1930 only 95 children under 15 years of age were certified as dying from pulmonary tuberculosis in the whole of London. If, as Dr. Collis infers, wider search for the bacilli will demonstrate "a surprising number of positive cases," I, personally, would have expected that deaths would be more numerous than is at present shown by the returns. But Dr. Collis tells me that he thinks pulmonary tuberculosis in which there is either no obvious expectoration or in any event no tubercle bacilli present in it, but in which tubercle bacilli presumably from swallowed sputum are found in the stomach contents, may be not only comparatively common, but benign.

If Dr. Collis can establish the frequency and favourable outlook of such a condition it will be of much interest scientifically, but I do not think it will have any immediate application from a public health point of view; our concern must remain chiefly with the grave disease where tubercle bacilli are found in the sputum, and we need not worry about children who are apparently getting well at present without our aid. But further work needs to be done on this controversial subject. Are the tubercle

[1] THE LANCET, 1931, ii., 649, 700.

bacilli which are found in these children's stomach-contents human or bovine? Dr. Collis has not yet typed his cases. Does the presence of tubercle bacilli in stomach contents in cases of erythema nodosum necessarily prove that pulmonary tuberculosis also is present? Dr. Collis tells me that in his cases there is X ray evidence of this in the lungs, but in his letter he hesitated to label these children as suffering from pulmonary tuberculosis.

One of the points of my article was to show that we must not confuse pulmonary tuberculous *infection*, which may be frequent and benign, with pulmonary tuberculous *disease*, which is rare and grave. I think here Dr. Collis and I are on common ground, and I agree with him that the boundary between the two conditions may have to be defined. In conclusion may I remind Dr. Collis that he is working where the most rare conditions in children are commonplace; while house physician in the same hospital some years ago I had the opportunity of observing a new case of congenital hypertrophy of the pylorus approximately every week; yet to the bulk of the profession this condition also must remain a medical curiosity.

I am, Sir, yours faithfully,

F. J. BENTLEY.

The County Hall, London, S.E., April 14th, 1932.

TOXIC EFFECTS OF PHENOLPHTHALEIN.

To the Editor of THE LANCET.

SIR,—I have read with interest in your issue of April 9th (p. 803) Dr. Phillipps's letter on the toxic effects of phenolphthalein, and the numbers of aperient proprietary preparations which now contain it. It is often a matter of extreme difficulty for the skin specialist who probably sees the most cases of toxic eruptions to elucidate the cause, and as new preparations are being constantly put on the market and prescribed it is a practical impossibility to be acquainted with all of them, and to have a knowledge of their ingredients.

I have records of three cases in which I ascribed the symptoms to the presence of phenolphthalein in a trade preparation. In one of these the toxic symptoms were as acute as Dr. Phillipps describes in his own case. This patient, a woman of 65, came on a visit to her daughter after an operation for removal of the breasts. Two days after her arrival she developed an acute erythematous and œdematous eruption, involving mainly the neck and upper part of the trunk. The itching was excessive, and her discomfort intense. As she was a Jewess of strictly orthodox type, the diet was naturally suspect; it was carefully investigated, without result. No medicines were being taken, except pil. alophen., which her surgeon had advised when an aperient was needed. She had taken this pill after her arrival. On suspension of the drug the symptoms rapidly responded to treatment. Pil. alophen. contains phenolphthalein, and though I had not previously diagnosed a case of phenolphthalein poisoning, I ascribed the symptoms in this case to its use.

In the other two cases the toxic effects were not so extreme as in this case, but as the symptoms were relieved on cessation of the drug they seemed clear cases of cause and effect. One of the cases had been ordered pil. alophen., the second case a paraffin preparation containing phenolphthalein. In both the main symptom was excessive itching, and in one case the irritation was so severe that she had produced numbers of sores by scratching. The eruption was difficult to define in these cases, as it varied in type, showing occasionally small ill-defined erythematous patches, or a few scattered papules lichenoid in type. Both were women of over 60 years of age, and the cases are of interest in view of the large number of cases in which pruritus is the main symptom, and for which no cause can be discovered.

I am, Sir, yours faithfully,

London, W., April 14th. ELIZABETH HUNT, M.D.

PSYCHOLOGY AND MEDICINE.

To the Editor of THE LANCET.

SIR,—In an interesting review of Dr. Alfred Adler's latest book in your last week's issue, the writer, who conceals his identity not too impenetrably under the initials F. G. C., claims Prof. Einstein as an adherent of Adler's system of individual psychology while quoting his bon mot that Adler is the Sancho Panza to Freud's Don Quixote. Now this epigram was the reply which Einstein gave to my question what he thought of Freud and of Adler, at Oxford last summer, when we were dining together at Christ Church. He also expressed the view as regards Freud's theory of infantile sexuality that "life couldn't be so complicated as all that." But he hastened to add that he could not speak with any authority on these matters as he had no special scientific acquaintance with the underlying facts. Here spoke the man of science, for it is really impossible to decide the validity of the claims of these contending schools of psychology without a wide experience of the facts, gained by patient and prolonged analyses of individual cases.

It is my own experience, after prolonged and deep analyses of many cases of psychoneurosis, that both theories, each in its own sphere, illuminate the results, and that a satisfactory explanation can only be gained if both points of view are retained. But this involves the rejection of much of the explanatory detail of each, and the incorporation of ideas from the recognised teachings of academic psychologists such as Ward, James, McDougall, Myers, and others. In other words, all these investigators are to be regarded as separate and original contributors to one single science, the science of psychology. Such a view is not eclecticism (a word that only has meaning, and a bad one, in philosophy), but the generally accepted view as to the nature of all genuine sciences.

If, on the other hand, psycho-analysis and individual psychology are set over against one another as mutually incompatible schemes of psychological thought, their fate will be that of the Kilkenny cats, and general psychology will have to get along without them. I am, Sir, yours faithfully,

Harley-street, W., April 16th, 1932. WILLIAM BROWN.

"LOW-SEGMENT" CÆSAREAN SECTION.

To the Editor of THE LANCET.

SIR,—Your second leading article of last week is entitled Low-segment Cæsarean Section. That operation has been called by many names, but is not this new one apt to lead to confusion? Lower segment is the term which has been used for generations and should, I think, still be used, since some operators make the incision for the classical operation low down in the upper segment—for example, Mrs. Ivens-Knowles, whose excellent results you give, though

you wrongly date her book on Cæsarean Section, which was published in 1931. Your article states :—

"H. R. Spencer has reported 120 cases, many of which were infected before operation, with four deaths. This should be compared with the 1·23 per cent. mortality at the Chicago Lying-in Hospital in 895 cases of the low-segment operation."

May I set out a few facts which render such comparison difficult? In my little book on Cæsarean Section (1925) I have given in detail every one of my 120 cases of Cæsarean section in hospital and private, over a period of 32 years, from 1892 to 1925 (I have since had one private case, successful to mother and child). The Chicago Lying-in Hospital cases are comparatively recent; were operated on by many operators, and not all their cases of Cæsarean section are given. In 1925 J. B. de Lee published 136 cases of the classical operation at that hospital, with seven deaths, but he did not give details of the cases. But he did state that in 24 of the cases the wound suppurated. My cases were not discharged before the 24th day; 59·8 per cent. of the Chicago cases were discharged by the 14th day, one on the 8th. And what about embolism after the lower-segment operation? Phaneuf reports 80 cases of that operation, with six deaths, and three cases of pulmonary embolism, one of which was fatal. Has embolism ever occurred with such frequency after the classical operation?

In my book I appealed for a complete and detailed record of cases in order that the relative merits of the classical and the lower-segment operation may be decided. The 895 Chicago cases of lower-segment operation (which is unsuited for the graver cases of cancer and tumours) are no answer to that appeal.—I am, Sir, yours faithfully,

HERBERT R. SPENCER.

Bickenhall Mansions, W., April 16th, 1932.

MARMITE IN SPRUE.

To the Editor of THE LANCET.

SIR,—In your issue of April 16th (p. 829) Dr. Janet M. Vaughan and Dr. Donald Hunter write on marmite in the anæmia of idiopathic steatorrhœa, and (on p. 837) is reported a contribution by Dr. Lucy Wills in the discussion at the Section of Tropical Medicine of the Royal Society of Medicine on the megalocytic anæmias of the tropics. May I recall that in the opening paper of a discussion on the treatment of sprue at the same Society on Dec. 3rd, 1923, I mentioned that I had for long used marmite in the treatment of sprue, nearly always complicated by anæmia, and recorded two cases of severe sprue who gained a pound a day for 14 and 21 days respectively, accompanied by great general improvement, on marmite treatment at the Hospital for Tropical Diseases, London, where I am still using it in such cases. Colonel W. P. Macarthur in the same discussion mentioned that he had independently come to the same conclusion, and B. K. Ashford, of Porto Rico, has also repeatedly laid stress on the importance of an unbalanced diet in predisposing to sprue.

I am, Sir, yours faithfully,

London, April 17th, 1932. LEONARD ROGERS.

ROYAL NORTHERN HOSPITAL.—Last year the in-patients numbered 6162, an increase of 756, and 369 of the 417 beds were in daily occupation. Out-patients' attendances numbered 339,579, an increase of 30,000. The deficiency on the year was just under £3000, as compared with nearly £10,000 in 1930. It has been necessary to close two wards containing 46 beds, the debt now being £121,328, of which over £65,000 is in respect of buildings and equipment. The private patients' wing is entirely self-supporting.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 9TH, 1932.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 70 (last week 95); scarlet fever, 1356; diphtheria, 726; enteric fever, 12; acute pneumonia (primary or influenzal), 1319; puerperal fever, 41; puerperal pyrexia, 96; cerebro-spinal fever, 74; acute poliomyelitis, 7; encephalitis lethargica, 15; dysentery, 13; ophthalmia neonatorum, 98. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 12th–13th was as follows: Small-pox, 117 under treatment, 6 under observation (last week 121 and 4 respectively); scarlet fever, 1419; diphtheria, 1390; enteric fever, 11; measles, 2712; whooping-cough, 425; puerperal fever, 30 (plus 16 babies); encephalitis lethargica, 228; poliomyelitis, 6; "other diseases," 121. At St. Margaret's Hospital there were 13 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 139 (66) from measles, 5 (1) from scarlet fever, 48 (10) from whooping-cough, 22 (6) from diphtheria, 46 (11) from diarrhœa and enteritis under two years, and 114 (19) from influenza. The figures in parentheses are those for London itself.

Dagenham and Willesden reported deaths from enteric fever. No great town reported as many as 10 fatal cases of influenza, Leeds standing highest with 8, and Bristol with 6. Leeds and Liverpool each reported 9 deaths from measles, Manchester 7, and Derby 5; but more than two-thirds of the measles deaths occurred in Greater London. There were 4 deaths from whooping-cough at Sunderland and at Birmingham.

The number of stillbirths notified during the week was 342 (corresponding to a rate of 46 per 1000 births), including 47 in London.

MEDICAL NEEDS OF SOUTH AFRICAN NATIVES.

Dr. A. J. Orenstein, president of the Medical Association of South Africa, speaking at the annual meeting of the Bridgman Memorial Hospital for Coloured People at Johannesburg on Feb. 25th, said that the economic position of the bulk of the natives is such that they are unable to pay for the medical attention they require. There had been, he said, talk of a national insurance scheme for natives, but even the relatively small sum which this would cost would be impossible for those in the rural areas, though the condition was slightly better in the towns. Work was done among the natives in the country by district surgeons, who were supposed to attend pauper patients. District surgeons, however, were few and far between, and their remuneration for attendance on paupers devolved on the local authority. The position, in Dr. Orenstein's opinion, is deplorable. At the end of 1926 it was found, in all provinces of the Union, that in the public hospitals there were 1803 beds for the use of natives. Half of these beds were divided among the three cities, and the average was one bed for 2000 persons. A conservative estimate for the needs of natives would be one bed for every 700 persons, and to provide even this low number 4000 additional beds would have to be found for part-paying or non-paying patients, and with capital expenditure and annual cost of maintenance the cost per annum would be roughly £500,000. He suggested an expansion of the existing hospitals, especially those run by private subscription. He also advocated more medical services for rural areas.

GRAND OPERA FOR BIRMINGHAM HOSPITALS.—Arrangements are being made for a week of grand opera at the Prince of Wales's Theatre, Birmingham, for the benefits of the city's principal hospitals. The whole of the scenery, properties, and wardrobes are being lent by the Covent Garden Opera Company. The General, the Queen's, and the Ear and Throat Hospitals will share the profits.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

PUBLIC HEALTH SERVICES.

IN the House of Commons on Tuesday, April 12th, on the motion that the Speaker do leave the Chair on the House going into Committee of Supply on the Civil Estimates, and Estimates for the Revenue Departments, 1932,

The Medical View.

Dr. MORRIS-JONES moved the following amendment:—

"That this House appreciates the progress made by local authorities since the passing of the Local Government Act of 1929 in coördinating and improving their public health services and, while recognising the need for economy in local expenditure, is of opinion that the development of these services should steadily continue as and when circumstances permit."

He said the Local Government Act of 1929 in its scope and magnitude, in the vast number of interests which it touched, and in its effects on the prosperity and well-being of this country, was one of the greatest measures ever passed by that House. The Act had 138 clauses and voluminous schedules, and the provisions dealing with the public health services alone occupied many pages. One of the big achievements of the Act was the transfer of the poor-law services to the present authorities. The new authorities two years ago succeeded in taking over their new duties without failing to relieve any known case of destitution. He questioned if any other country in the world could have achieved such a change in like manner. The main objects of the public health provisions were to achieve eventually improved and efficient public health services in this country, and in the second place to secure economy. Looking back over the records of the last 40 years he found that expenditure on local administration, which was £36,000,000 in 1891, was to-day close on £300,000,000, and a very large part of that sum came under the head of public health. Schemes were supposed to be submitted under the Act of 1929 for the absorption of poor-law institutions. Other institutions were to be altered and made more adaptable to modern conditions. Some were to be declared redundant, and some were to be used for a different purpose. That movement was undoubtedly long overdue in the interests of public health. He understood that in the London area very much progress had been made in dealing with poor-law institutions. He saw from the figures of the last report of the Minister of Health that 37 poor-law institutions had been appropriated for use as hospitals, and nine of them for use as children's hospitals or convalescent homes.

THE TRANSFERRED HOSPITALS.

The case in the country was far from satisfactory. Only 19 out of 79 county boroughs had submitted schemes for the reclassification of their poor-law institutions, and not one county council outside London had been able to appropriate a single poor-law institution for the purpose of a general hospital under the control of the local authority. The intention of the 1929 Act was that all local authorities should, as far as possible, provide all the assistance necessary on medical and public health grounds under powers which they possessed under other Acts than the Poor-law Acts. The Local Government Act empowered them to make a declaration that such-and-such health services should be provided otherwise than by way of poor-law relief. Were the local authorities making these declarations? Had any county council or county borough yet transferred the functions of the public assistance committee to the public health committee or to the maternity and child welfare committee? He did not suggest that they should have too much departmentalism in the public service. Medical officers in charge of such services should work as a team. There was permission under the Act for medical officers to consult with the specialists of the large public hospitals. He was afraid that so far not much in the way of consultation was going on. He had no doubt that the tendency of the Ministry of Health was to get whole-time medical officers under their control as far as they could. He was a great believer in the general medical practitioner, and he hoped that the Minister would discourage any tendency to relegate the treatment of disease to officers of the Ministry. Some local authorities were suggesting doing away with the old poor-law medical officer. He would be very sorry if that came about. One or two authorities had suggested that visits to patient's homes should be made by their own institutional medical officer, and one authority had proposed, or had had under consideration, the setting up of a panel something like that under the National Insurance Act whereby a sick person in receipt of parish relief would be able to select any doctor from the panel in the neighbourhood. He did not think that that would lead to efficiency or economy. The old parish doctors contained among their class the ablest and most conscientious general medical practitioners in the country, who regarded it as a privilege and a pride to look after the poor. These doctors were the only medical men in many areas, and they attended both rich and poor. Under the Act a doctor could only be relieved of his office with the consent of the Minister, and he trusted that the Minister would reluctantly give his consent, unless there were medical grounds for doing so.

ECONOMY AND EFFICIENCY.

The second main function of the Act was national economy. He would like to know what effect the crisis of last September and since had had in regard to public health services, and whether the Minister considered that there was a reasonable standard of efficiency and progress maintained without excessive or unreasonable expenditure. While he took the view as a medical man that expenditure on health services must not be curtailed at the cost of efficiency, he also held the view that it must be examined thoroughly in view of the state of the national Exchequer. Looking into the figures of the reductions in rates, for instance, he found that local authorities had been able to arrive at a fictitious reduction in many cases, but that owing to increased assessments the amount actually expended by many local authorities at the present time was greater in 1931–32 than in the previous year. He did not think that the present House of Commons was reactionary in regard to public health. He felt sure that it would support the Minister of Health in any measures that might be required to retain for this country a model public health service.

Lieut.-Colonel FREMANTLE, in seconding Dr. Morris-Jones's amendment, said there were four lines of thought in considering the Local Government Act in these difficult times. First, they were all agreed that they must maintain the efficiency both of their institutions and their personnel. They could not allow any economies to reduce that. In the second place, in view of the necessity for economy, they wished to make better use of the present facilities by reorganisation. In the third place, they ought to revise the traditions or the groove into which administration might have sunk in the light of experience. Fourthly, they wished to advance slowly on an agreed path. They had to face the fact that they could not as yet measure the results of the Local Government Act by any definite figures, although the late Minister of Health and others supporting him tried to measure their efficiency by the decline in the mortality rates. The figures for 1931 were definitely disappointing. That was

obviously not due to this Government, though it might be due in some part, if they could measure it, to the Local Government Act. The birth-rate in 1931 fell from 16·5 to 15·8, which was the lowest point yet attained, and the death-rate went up from 11·5 to 12·3, and infant mortality rose from 60 per 1000 to 66 per 1000. Fears had been expressed as to the future of our poor-law institutions, and they might have expected to see some decline in their efficiency as the result of the enormous task of transferring them to new authorities. He felt confident, however, that those fears had not been realised. Those who had worked professionally with the local authorities, or who were otherwise in close touch with their work, recognised that great advantages were accruing on the professional side of the work of those institutions.

ANOMALIES IN SMALL-POX ADMINISTRATION.

Take the appalling waste which arose from having isolation hospitals all over a county. He hoped the reorganisation under the Act would be carried on, because it would be of enormous advantage if they could bring it into effect in the next two or three years. As an extreme case let them take the provisions of small-pox hospitals. They all knew how inadequate had been the arrangements for dealing with a small-pox epidemic. It was quite clear that in the revision of the machinery for maintaining public health they must revise the vaccination laws and the whole of the vaccination machinery. To what extent was the transfer of powers under the Local Government Act preparing for such a division of the vaccination laws and their administration? He hoped that the county councils in taking over powers to deal with small-pox, sanitation, and vaccination would prepare sound schemes which would enable them to deal with the appalling anomaly which existed at the present time—this hypocrisy under which the country was supposed to have a system of compulsory vaccination when only one-third or one-fourth or less of the population now growing up were vaccinated.

VOLUNTARY HOSPITAL SYSTEM.

Another point they had to consider in developments under the Local Government Act was the threat to voluntary institutions—voluntary hospitals and voluntary agencies engaged in health work. The more they coördinated municipal work, and regularised the official system, the more difficult it was to fit in the voluntary system with it, and yet they all appreciated the enormous advantages of the voluntary system, where it was properly supported, in connexion with hospital work. Even the most extreme Socialist recognised that for the present the voluntary system must remain. It would be perfect madness to contemplate, even in the more distant future, any interference with the efficiency of voluntary hospitals and other institutions. They were constantly met by the statement that the work of raising money for voluntary hospitals and other institutions was degrading, and that they ought to be put on the rates. The advantage of the voluntary system was that those who gave to them generally helped to see that results were obtained from their contributions. Municipal hospitals generally had a much duller and less appetising air about them. The voluntary system was essential both to economy and efficiency. In London they saw the problem in its most acute form, though it was reflected all over the country. In London everything had been done by the officials to try and work in with the voluntary hospitals, and yet the voluntary hospitals felt that by degrees they were fighting a losing battle, and that it was more and more difficult for them to hold their own against the municipal side of hospital work. Perhaps the Minister of Health could reassure the House on that point.

LONDON MEDICAL SCHOOLS.

He had been in close touch with the 13 teaching voluntary hospitals in London, and they had been seriously perturbed by one fact. In the Local Government Act provision was made for a London Voluntary Hospitals Committee to be in constant consultation with the London County Council, but there were 150 hospitals represented on the committee, and the 13 teaching hospitals felt that they had not had their interests adequately considered. There was an idea that the London County Council were going to set up a central teaching hospital which would compete with the voluntary teaching hospitals which had been the foundation of British medicine. He did not believe that that was intended by the London County Council, but they were intending to carry out the splendid scheme introduced by the last Government but one for a post-graduate teaching centre in London. As regarded ordinary teaching, there was a definite part to be played by the voluntary hospitals and a definite part to be played by the poor-law hospitals. How should those two be brought together? There must be some clear understanding of their relative functions. On the one hand there were the voluntary hospitals, which must do the main work of teaching and research, which he did not think could be properly carried out by municipal institutions. The municipal hospitals ought to be working in coöperation with the voluntary teaching hospitals with a view to effecting greater economy. The municipal hospitals had a large range of clinical quarters in their medical schools which should be of great advantage to the rising medical profession and the nursing profession. The ordinary voluntary hospitals took one-fifth of the cases in London, and they would willingly help the poor-law infirmaries, if arrangements could be made to do this. That would be an advantage to the hospitals and to the municipal institutions. It would also lead to a great economy, and help coöperation between municipal and voluntary hospitals which they all desired to see. There was a great future for coöperation between the laboratory services. They had been looking forward to the first revision of grants under the Local Government Act. Grants were made for three years as from April 10th, 1930, to 1933, and then the new bodies would start to receive grants for four years, and afterwards for five years. He hoped it would not be necessary to reduce the grants, and that the power given in Section 104 of the Local Government Act would be found useful in bringing local authorities up to the mark.

After further debate,

The Opposition View.

Mr. LANSBURY said that at a period like the present it seemed to be absurd to say that they ought to economise on any public health service. In spite of national need and money stringency he maintained that a period of great unemployment was exactly the time when there ought to be more money spent on public health services. The London County Council and other local authorities had carried economy in health services much too far. He felt certain that when they received the next year's reports of the medical officers of the Ministry of Health, the Board of Education, and the London County Council they would show a very marked difference in the physique of the children. Mr. Greenwood, when he was Minister of Health in the late Government, intended to introduce a Bill to deal with the problem of maternal mortality, but he was told that he could not bring it forward because of financial stringency. Was there any possibility of that particular Bill being passed this year? Every voluntary hospital in London was more or less in a bad way, and they were living from hand to mouth. On the education side some of their work was magnificently done. In regard to the poor-law hospitals they were doing a fine work without any sort of stigma of pauperism about it at all. They were trying to create, although it did not exist yet, a real municipal health and hospital service. He wished to see a national medical service throughout the country, but meanwhile he would like to see, especially in

London, real coöperation and coördination in the work of municipal and voluntary hospitals.

Government Reply.

Sir E. HILTON YOUNG (Minister of Health), replying to the debate, said that there had been a resolute attempt to represent that unwise restrictions were being placed on the public health services in the interests of economy. For that suggestion there was no shadow of foundation of any sort or kind. The first argument used in favour of that contention was a misquotation of a Circular on economy issued at the time of the national crisis to local authorities. The words of the Circular were :—

"His Majesty's Government would not contemplate that local authorities should embark on a wholesale and ill-considered course of cutting down expenditure, whatever be its character or purpose. Such a policy seems to them neither necessary nor advisable."

Was there in that any reckless disregard of the efficiency of the services in the interests of economy? Further down in the Circular they found the special reservation that consideration was to be given as to whether a service was required on urgent grounds of public health. It was the policy of this Government, as it must be the policy of every Government which had the welfare of the country at heart, to consider public health as a matter of urgent national importance and to regard economy as false which would reduce the efficiency of the essential services.

ESSENTIAL SERVICES.

He had taken pains to get an estimate of all the schemes of development in matters of public health before the Ministry at the time of the oncoming of the effort for economy. These amounted roughly to £1,000,000 worth, and of that not more than £150,000 worth had to be abandoned as not essential. Of the essential services he would put in the forefront at the present time the service of maternity and child welfare, and the service for dealing with the great scourge of tuberculosis. They had now an important new weapon in the fight against tuberculosis. Since the initiation of the new system of local administration, owing to the coördination of public assistance with public health services, they could now follow up cases when they left the sanatorium. At the end of December, 1930, the number of beds available for the treatment of tuberculosis was 15,972; at the end of December, 1931, the number available was 17,609. There was no evidence there of relaxation of effort. At the end of 1931 the number of infant welfare centres in England and Wales was 3043, compared with 2935 at the end of 1930. The number of antenatal clinics in England and Wales at the end of 1931 was 1262, compared with 1101 at the end of 1930. As regards maternal mortality he knew that there was a scheme put forward under the late Labour Government for the service to which Mr. Lansbury had referred, but that scheme was typical of the complete lack of touch with realities in administration shown by the late Labour Government. It would have placed a burden on the country's finances of a nature which the country was totally unable to bear at the time. Nor was it well conceived to get the best possible use out of the public money required to finance it. But because that was a frank impossibility at this time did it mean that they were going to relax in the war on maternal mortality? On the contrary, if they got rid of illusions they would be able to proceed in the most practical way to get the best use of the resources available. The Ministry had already sent a Circular to the local authorities for this purpose. There were services for promoting the welfare of mother and child before, at, and after birth, which local authorities could render, but they did not all render it. The Ministry was endeavouring to stimulate the local authorities to come up to the standard of the best, and make use of the powers which they already had. Further effort would be made to persuade those authorities which needed persuasion to strengthen their maternity services. Stress must be laid on the importance of educating the women themselves to take advantage of the services. Particular attention must be paid, of course, in the interests of economy to those areas in which the mortality among mothers was the highest.

PROGRESS OF COÖRDINATION.

The coördination of public health and public assistance was already yielding most valuable, interesting, and important results both in efficiency and economy. In the general scheme of the nation's finances there was no need for an immediate grip of parsimony in the public health services such as there was in some other national services, because there was a margin in the block grant for the development of the health services. When he spoke of the extension of the maternity services and the effort to secure a better standard among local authorities, he was relying upon the margin which was provided by the £5,000,000 increase in Exchequer money which was made available for local authorities at the time of the institution of the block grant system. That was one benefit from the new scheme. Another great benefit was the ability of the Ministry of Health to concentrate on its proper work as a clearing house of knowledge and information, and the source from which counsel and advice could proceed to keep the local authorities in touch with the best knowledge available for their service. The Ministry also had to be the staff brains of the whole national health services. Special inquiries had been carried out quite recently in the discharge of those staff functions into tuberculosis, cancer, and cerebro-spinal meningitis. Another bit of staff work which had been done at the Ministry of Health was in connexion with the important matter of nutrition. That was a modern science on which floods of fresh light were being cast every day, and it was difficult, even for the medical officers, to keep up to date with the latest information. In order to help them they had instituted a new standing advisory committee to collect the latest information on nutrition for the benefit of the medical profession and the public as a whole. The practical lesson of experience was that this was not very important for the middle and upper classes, which had a varied diet, but it was very important for the wage-earning classes, where diet was not so varied. The committee had brought out two reports, one on diet in poor-law children's homes, and the other on the vitamins, where the uninitiated could follow the natural history of these difficult subjects from vitamin A down to vitamin D, and even to vitamin E, and its function in promoting the fertility of rabbits.

HOSPITAL TRANSFER A SLOW PROCESS.

The classification of institutions, and in particular the transfer of hospitals from poor-law conditions to the new status of the general purposes hospital, was a problem which could not possibly be dealt with effectively in a short time. But he could say that the progress had been good and satisfactory, particularly in London. Sixty-eight institutions had been appropriated for special purposes following on a scheme of classification according to the last report. Since that report 11 more had been classified. There was nothing to complain of in the rate of progress there. The transfer from poor-law status to general public status in the case of hospitals was acting as a remarkable stimulus upon the institutions, since it made them, as it were, equals of the greatest and most famous hospitals in the land. It was the policy of the Ministry of Health to promote coöperation between voluntary and public hospitals in every possible way. The necessity of the voluntary hospitals as a part of our national scheme was recognised as an essential part of the structure. Both the voluntary hospitals and the public hospitals had their own useful fields of activity. He knew of no sense of hostility or antagonism between them, and there was no reason why there should be. The only rivalry was as to which could treat their patients best. The Ministry of Health must see that the

two divisions in the hospital structure should each pay due regard to the opportunities and possibilities of the other, and that each should be duly fitted into the structure. The review of boundaries was proceeding as fast as the difficulties would allow. They had to reconcile old traditions, old prejudices, and, in some cases, old antipathies, in order to carry out arrangements desirable in the interests of economy and efficiency in the modern world. On the whole progress had been satisfactory. Nine reviews had been completed, and four more inquiries had been held, which would lead to a decision very shortly. In addition to those 13, 15 others were being arranged, and as regards some others it was necessary to give those extensions of time which the Act contemplated. It was the policy of the Ministry of Health to encourage the making of exclusive declarations where it was possible in order to complete the process of segregation of activity which was the primary object of the Local Government Act. Here, again, a careful survey of all the services necessary was made, and in many cases a survey of the institutions must proceed to a fairly complete stage before a declaration could be made. Therefore they could not expect many declarations just yet. The number made last year was five, in addition to those already mentioned.

POST-GRADUATE SCHOOL.

As to the situation in regard to the post-graduate school, that was a typical instance of how the voluntary hospitals and the public hospitals could discharge complementary functions in the whole scheme of hospital accommodation. The post-graduate school had now come to birth, and they believed that it would be of very great promise for the future of medical science, medical education, and the health of the people. It had come to birth at the London County Council hospital at Hammersmith. It would be a school in connexion with a public general hospital, the only one of the kind. The present stage of its evolution was this: the Charter had been granted and the governing body set up. At present the actual organisation of the school and a scheme for the provision of buildings for the school were being worked out, and before very long they hoped to see this school an established fact.

Replying to Mr. D. GRENFELL, Mr. ERNEST BROWN (Parliamentary Secretary to the Ministry of Health) said that if the hon. Member would study the last Report, that for 1930, issued by the chief medical officer of the Ministry, he would find a most valuable section dealing with cancer, and another section dealing with rheumatic diseases. So far from being lax in this matter the Ministry was thoroughly alive to the need for research, as well as for action in connexion with those diseases.

Dr. MORRIS-JONES asked leave to withdraw his motion.

The motion was withdrawn.

HOUSING POLICY.

Replying to a debate on housing policy which followed,

Sir E. HILTON YOUNG said that each house approved for subsidy would incur to the Exchequer a liability of £130, and a consequential liability to the local authority of £65, so that the liability to public funds incurred by each house approved for subsidy was £190—the equivalent of a charge on the Exchequer of £7 10*s.* per year for 40 years. That showed how serious was still the liability, even with the fall in the cost of housing, involved in the approval of houses for subsidy. He warned the House that in the present state of national finance it was not possible to look upon that obligation lightly. Already the annual recurring liability in the national budget for housing was £12,750,000. Since the war the number of houses built had been 1,820,000. The increase in population between 1921 and 1931 was 2,000,000. The result was that at the present time over the country as a whole the average number of persons to a house was barely four. That did not show that there was no longer a housing problem, because there was not an even distribution over every class of house and all over the country. It showed, if they took the country as a whole, that there was no evidence of a housing shortage. It meant that in each proposition for fresh housing they must consider whether the area in question was one of the areas that was in need of more housing accommodation. It was established that there was no longer any need for a great State effort to provide the kind of housing which for the most part they had been providing, and that they had provided enough of the better class subsidised house. What they had not done was to provide enough smaller houses for the poor person. They must, therefore, concentrate the whole housing effort on the provision of smaller houses for the wage-earners which required State assistance. That was the policy of the Government at the present time.

With regard to the slum areas, Sir E. Hilton Young said that the remedying of that evil must always continue along with the adequate supply of new houses of the type which the country required. Under the Act of 1930 a very drastic method was applied for dealing with the problem. That Act was a very powerful engine, and needed to be used with great caution. He was not surprised, therefore, that the local authorities were proceeding slowly in that matter. Nevertheless, under that Act schemes had been passed for clearance areas which would finally lead to the clearing away of 13,500 unfit slum houses. So far the number of houses dealt with under the Housing (Rural Workers) Act, 1926, was 4469, and he hoped that further use would be made of that Act. The applications received for the construction of houses under the Housing (Rural Authorities) Act, 1931, had not been so large as was expected, but 112 applications had been received for some 2000 houses, which were now under construction. Rebutting the suggestion that the Government were relaxing in a substantial degree their housing effort owing to the influences of considerations of economy, Sir E. Hilton Young said that at the end of February there were 38,450 assisted houses under construction, and on the corresponding day in February in the year before there were 36,000. This showed that there was no falling off in the building effort of the country.

The motion that the Speaker do leave the Chair was agreed to.

TRANSITIONAL PAYMENTS BILL.

The Transitional Payments Prolongation (Unemployed Persons) Bill was read the third time.

This Bill was read the third time in the House of Lords on Thursday, April 14th, and afterwards received the Royal Assent.

REGISTRATION OF FOOD FACTORIES.

On Tuesday, April 12th, the London County Council (General Powers) Bill was considered by a Select Committee of the House of Commons.

The Hon. EVAN CHARTERIS, K.C. (who appeared for the L.C.C.), said that the part of the Bill which was opposed was Clause 16. The purpose of that clause was to enable the Council to compel the registration of certain premises in which certain kinds of food were prepared or manufactured. The clause required the registration of—

> "any premises in the district of any sanitary authority used or proposed to be used (1) for the sale, or the manufacture for the purpose of sale, of ice-cream or other similar commodity, or the storage of ice-cream or other similar commodity intended for sale; or (2) for the preparation or manufacture of sausages, or potted, pressed, pickled, or preserved meat, fish, or other food intended for sale."

The object of the Council, Mr. Charteris said, was to anticipate the evil, instead of punishing those found guilty of it, by registering the premises in which these various processes were carried on. The proposals in regard to ice-cream were not opposed, but there

was a petition against the other portion by the National Federation of Meat Traders' Associations.

Dr. CHARLES PORTER, called as a witness on behalf of the promoters, said that the principal factor which rendered this such an important matter was that unless there was adequate control of food there was serious risk of contamination, with consequent injury to public health. The Society of Medical Officers of Health, he said, had always been in favour of registration, without which it was quite impossible to know the situation of the places where this work was carried on, and to take measures to avoid the risk of contamination. There was a great increase at the present time in the use of cooked foods and foods which could be easily cooked. Sausages were one of the most commonly used articles of food among poorer people, and food-poisoning cases were almost invariably due to foods of this type.

The Committee decided to allow Clause 16 to remain in the Bill.

THE BUDGET.

On Tuesday, April 19th, the House of Commons went into Committee of Ways and Means, Sir D. HERBERT in the chair.

Mr. CHAMBERLAIN, Chancellor of the Exchequer, in the course of his Budget statement, said that in September last, at the time of the national crisis, there was a prospective deficit of £74,000,000. To make good that deficiency and to balance the national accounts demanded the highest courage and determination on the part of the Chancellor of the Exchequer, and supreme confidence in the readiness of the people to undertake whatever burdens and sacrifices might be laid upon them in order to support the national credit. (Cheers.) By a combination of economy and new taxation Mr. (now Lord) Snowden had provided for a reduction of debt by £32,500,000, and for a surplus of £1,500,000. Not only had his noble friend's anticipations been fulfilled but, together with the small surplus of £364,000 which had actually been achieved, must be taken the fact that, instead of £23,000,000 being appropriated from the Dollar Exchange Fund, as was proposed in September, it had only been necessary to take £12,750,000. They were therefore £9,000,000 better off than Lord Snowden had anticipated. (Cheers.) That result had produced a profound impression upon instructed opinion in all parts of the world. (Cheers.) In spite of the concessions which the Government had made on the pay cuts originally proposed the estimated economies had been more than met, and, the reduction of unemployment coming to their aid, they were able in the end to show savings amounting altogether to £34,500,000, compared with Lord Snowden's proposed economies of £22,000,000.

Proceeding to deal with the estimates for this year, Mr. Chamberlain said that nothing was included in respect of receipts for reparations and allied war debts, or in respect of outgoings for war debt payments. Both sides of the account were treated as being in suspense. Similarly, nothing was included in respect of receipts for those Dominion war debts, the service of which had been suspended until July 1st next. This meant a shortage of £10,000,000 as compared with the forecast of last September, which assumed that after the expiration of the Hoover Moratorium the previous position of reparations and war debts would be restored. Last September the total for supply services for 1932–33 was estimated at £526,000,000. It was proposed to effect economies of £70,000,000, leaving the total at £456,000,000. Actually the estimates presented to Parliament showed a total of only £447,204,000. The savings therefore amounted to nearly £79,000,000 in spite of concessions in pay cuts costing £3,500,000, and of unprovided expenditure to the amount of about £1,250,000 for income tax collection and work under the Import Duties Act. It was estimated that there would be a decrease of £10,000,000 in surtax, and £28,000,000 in income tax compared with the estimates for last year. The total inland revenue was estimated at £427,000,000, or more than £32,500,000 less than the figure provisionally put forward in September. Customs and excise were estimated to yield £297,500,000, or about £40,000,000 more than last year. He regretted that there was no opportunity this year of giving any relief to the income-tax payer. Nor could he make any change in the beer duty. The rates of duty on motor-cycles would be fixed at 15*s*., 30*s*., and £3, according as to whether the engine was of a capacity not exceeding 150 c.cm. and not exceeding 250 c.cm., and exceeding 250 c.cm. respectively. This scale would come into force on Jan. 1st, 1933. Any cycle registered for the first time before Jan. 1st next, on which duty had been paid at the rate applicable to a cycle under 224 lb. unladen weight, would in future continue to be liable to the lower rate of duty applicable to cycles with an engine capacity between 150 and 250 c.cm. The tea duty would be raised to 4*d*. per lb. on foreign tea, with a preference of 2*d*. per lb. in favour of Empire tea. The final balance sheet showed an estimated expenditure of £766,004,000 and an estimated revenue (including £33,000,000 from the 10 per cent. revenue tariff, horticultural products duty, additional duties recommended by the advisory committee, and the proposed changes in taxation) of £766,800,000. This left an estimated surplus of £796,000.

HOUSE OF COMMONS.

TUESDAY, APRIL 12TH.

Health and Housing in Scotland.

Mr. BARCLAY-HARVEY asked the Secretary for Scotland the total amounts expended on health and housing, exclusive of relief to unemployed persons, by the Government and local authorities in Scotland in the financial years 1912–13 and 1930–31, respectively.—Mr. SKELTON replied: I regret that information for the year 1930–31 is not yet available. The following table gives the expenditure on housing and health services in Scotland during the years ended May 15th, 1913, and 1930.

Service.		Expenditure out of— Parliamentary votes and grants.	Local rates.	Other receipts (rents, &c.)	Total expenditure.
		£	£	£	£
Housing ..	1913	Nil.	38,310	105,872	114,182
	1930	1,621,000	656,000	2,442,000	4,719,000
Health Services*	1913	30,000†	390,358	10,000‡	430,358
	1930	625,000	1,006,000	41,000	1,672,000

* Comprises hospitals, treatment of disease (including tuberculosis and venereal diseases) and maternity and child welfare
† Estimated proportion of grants for general expenditure.
‡ Estimated.

WEDNESDAY, APRIL 13TH.

Hospitals and Motor Accidents.

Sir JOHN HASLAM asked the Minister of Transport if he was aware that, according to the British Medical Association, 7326 motor accidents were treated in 135 hospitals during 1931, incurring a total cost to the hospitals of £64,132, and that the claims repaid under the Road Traffic Act amounted to £6575 or about 10 per cent.; and what steps he proposed to take in order that the expectations under the Act could be realised.—Mr. PYBUS replied: As I stated on Feb. 17th, in answer to a somewhat similar question, while I sympathise with the difficulties of the hospitals I am afraid I cannot see my way to introduce further legislation.

Motor Accidents: Responsibility and Compensation.

Mr. RHYS DAVIES asked the Home Secretary the number of motor accidents in which the police had failed to trace some of the responsible parties during the last six years, and the number of cases in which compensation in some form or other had been paid to the victims of those accidents.—Mr. STANLEY (Under Secretary, Home Office) replied: I am informed by the Commissioner of Police that during the last six years there have been eight persons killed in the metropolitan police district by unknown vehicles. Corresponding figures for the rest of the country are not available, nor as to non-fatal accidents in the metropolitan police

district. No information is available as to the number of such cases in which compensation has been paid.

Supply of Medicines in Rural Districts.

Mr. PERKINS asked the Minister of Health whether his attention had been called to the fact that insured persons living in the village of Edgeworth, Gloucestershire, had to walk six miles to Painswick to obtain medicine; and whether he would consider the advisability of the establishment of a surgery in the village of Miserden.—Sir E. HILTON YOUNG replied: My attention has not previously been drawn to this matter, but I am making inquiry and will communicate further with my hon. friend.

THURSDAY, APRIL 14TH.

Cost of Health and Housing Schemes.

Mr. BARCLAY-HARVEY asked the Minister of Health what was the total cost of health and housing schemes of the Government and local authorities in England and Wales in the financial years 1912–13 and 1930–31 respectively, excluding any sums paid in relief of unemployment.—Sir E. HILTON YOUNG replied: It is assumed that the health schemes of local authorities referred to by my hon. friend are those which, prior to April 1st, 1930, were assisted by direct Government grants. These grants (except the Port Sanitary grant) were discontinued by the Local Government Act, 1929, and were merged in the new Exchequer grants which are paid towards local government expenses generally, and cannot be apportioned to individual services. I am appending a statement relating to 1912–13 and 1929–30 (the latest year for which figures are available), showing the gross expenditure of local authorities on these services and on the housing service, the Government grants, and other specific income in aid of the services, and the balance of expenditure not met out of specific income. (See Table.)

Statement showing the Expenditure and Income of Local Authorities in England and Wales in Respect of the Undermentioned Services.

Service.	Year 1912–13. Total expenditure other than out of loans.	Year 1912–13. Income other than from loans. Government grants.	Year 1912–13. Income other than from loans. Other specific income.	Year 1912–13. Balance of expenditure not met out of specific income.	Year 1929–30. Total expenditure other than capital expenditure.	Year 1929–30. Income other than capital receipts. Government grants (a).	Year 1929–30. Income other than capital receipts. Other specific income.	Year 1929–30. Balance of expenditure not met out of specific income.
	£	£	£	£	£	£	£	£
Tuberculosis	95,500	30,000	35,500	30,000	3,338,940	1,697,849	117,467	1,523,624
Venereal diseases ..	—	—	—	—	411,341	300,313	1,266	109,762
Maternity and child welfare	—	—	—	—	2,408,801	936,246	446,319	1,020,236
Port sanitary	47,500	3,900	14,200	29,400	107,085	41,927	13,639	51,418
Welfare of the blind ..	—	—	—	—	468,795	8,470	31,474	428,851
Mental hospitals ..	4,288,000	998,000	580,000	2,710,000	9,052,325	1,119,689	1,847,144	6,085,492
Mental deficiency ..	—	—	—	—	1,500,244	678,250	127,604	694,390
Housing:—								
Assisted housing schemes under Housing, &c., Act, 1919	—	—	—	—	14,094,401	6,744,135	6,160,700	1,149,566
Other State-aided housing schemes ..	—	—	—	—	16,714,816	4,595,073	10,939,865	1,161,878
Other housing schemes	850,000	—	647,000	304,000	1,625,584	1,606	1,366,829	257,147

(a) Including grants made in connexion with schemes of work for the unemployed. The amounts of these grants are not distinguished from other grants.

Examination of Girls Concerned in Sexual Offences.

Captain ELLISTON asked the Home Secretary whether arrangements were being made to appoint women medical officers for the examination of girls concerned in sexual offences, in accordance with the requests of moral welfare committees in the metropolitan area.—Sir HERBERT SAMUEL replied: The number of cases is not great enough to warrant special appointments, whether of men or of women, for this purpose. If in any particular case the parents of the child desired that the examination should be conducted by a woman doctor and one were available, her services would be utilised.

Sweepstakes.

Mr. HUTCHISON asked the Home Secretary whether there would be any alteration in the administration of the law affecting sweepstakes by his department during the period in which that question was being examined by the proposed Royal Commission.—Sir HERBERT SAMUEL replied: I do not contemplate any alteration.

Slum Clearance Schemes.

Mr. GROVES asked the Minister of Health how many slum-clearance schemes were at present being carried out in England and Wales; the total number of houses to be demolished; and the total number of houses to be constructed.—Sir E. HILTON YOUNG replied: I have received resolutions declaring 417 areas in England and Wales, the clearance of which involves the demolition of approximately 14,000 houses, to be clearance areas under the Housing Act, 1930. It is anticipated that houses sufficient for the accommodation of 68,000 persons will be provided.

Town and Country Planning Bill.

Mr. LOGAN asked the Minister of Health what action it was proposed to take to ensure the passing of the Town and Country Planning Bill this session.—Sir E. HILTON YOUNG replied: I hope that no special action will be required to ensure the passing of the Bill this session.

Incurable Disease in Britain.

Mr. RHYS DAVIES asked the Minister of Health if he had any information as to the number of persons suffering from incurable disease in this country, and the number for whom accommodation was provided by voluntary organisations; and whether there were any public institutions for incurables who were unable to look after themselves, apart from mental institutions.—Sir E. HILTON YOUNG replied: I regret that I am not in possession of any statistics on the points raised in the question. I do not know of any institutions that exactly answer the description in the last part of the question.

TUESDAY, APRIL 19TH.

Cerebral Fever at Windsor.

Mr. MCENTEE asked the Financial Secretary to the War Office how many of the cases of cerebral meningitis at Windsor were among troops quartered in the modern barracks; how many were among troops in the older quarters; and whether full sanitary provisions were made in the quarters of the guard at Windsor Castle—Mr. DUFF COOPER replied: There are no strictly modern barracks at Windsor, although improvements have been introduced from time to time. Since Jan. 1st there have been nine cases of cerebro-spinal fever, five of which occurred at Victoria Barracks, and four at Combermere Barracks. The answer to the last part of the question is in the affirmative.

OBITUARY

ARTHUR JERVIS, M.D. Durh., D.P.H. Camb.

THE recent death of Arthur Jervis, although it did not come as a surprise to those who knew him best, brought to all his friends a sense of the loss of a lovable personality. He was little in the public eye, but he lived a life of great helpfulness to his circle. He was educated at St. George's Hospital, and after taking the usual double qualification in 1885, he matriculated at Durham and took the M.B. and B.S. of that University in 1889, the M.D. in 1897, and the D.P.H. of Cambridge in 1895. He served as house surgeon at the Dreadnought Hospital and he was house physician and assistant registrar at St. George's. Soon after he qualified he had a brief experience of practice, but he disliked it and gave it up. When the war came in 1914 he volunteered for service, but, as was too often the case with similar offers, he was told that "veterans were not wanted." He was determined to be useful, however, and returned to his old hospital as house physician and surgeon for a year, serving under some of those who in earlier days had been his clinical clerks. Even after this he was not acceptable to the home authorities, but the French Red Cross gladly accepted his services and he spent many months in the Verdun area. His intimate knowledge of the language enhanced the value of his services and he had the unusual privilege of being taken over the whole of the French front. After these adventures the home authorities at length gave him a commission and utilised his services for some months in the examination of recruits. He was then transferred for service in hospital ships and he served in these until the end of the war. Unfortunately in his last voyage to Palestine he contracted malaria which developed after his return home. For the rest of his life he had to submit to impaired health, and he became too conscious of a degree of deafness; this was not bad enough to interfere with the willing help which he gave to others, but it made him shy of what he called "inflicting himself on his friends." But no one who knew him could call a visit from Jervis an infliction, for he was full of interests and knowledge. An intimate circle of friends is left to deplore his death.

JOHN HENRY SALTER, M.R.C.S. Eng., D.L., J.P.

A REAL personality in the medical profession, Dr. John Henry Salter, of Tolleshurst D'Arcy has died at the great age of 91; having been 67 years in a country practice he died in harness, indeed it is only a few days since he was reappointed medical officer of health for his own district of rural Essex.

Dr. Salter whose whole life has been associated with Essex, received his medical education at King's College Hospital and took the qualifications of M.R.C.S. Eng., L.S.A. Lond., in 1864. He has himself recorded that his original intention was to devote himself to pure surgery, but he considered that the loss of an eye in a shooting accident would be a drawback to his prospects, and settled down to country practice as quite a young man. He met with great professional and social success. In the straggling district of Essex marked out by the towns of Colchester, Chelmsford, and Maldon, he was known personally or by repute to everyone—he may be said to have been an institution both as doctor and sanitarian. But his fame as a sportsman was perhaps greater and was certainly more widely spread than as a doctor. The loss of an eye did not prevent him from becoming famous as a shot and his home, D'Arcy House, was full of sporting trophies. He is reported to have kept a diary throughout his extensive life, and seeing the changes which that life has seen in the profession of which he was a devoted exponent, it is to be hoped that parts at least of his diary will be free for publication. The diary of the medical man must contain much unfitted for the public eye, but in a record of 60 or 70 years of country practice there must lie a picture of English society of great significance. And this the more that Dr. Salter knew, and, indeed, was the personal friend of many distinguished people outside the county of Essex, where he was a magistrate and deputy-lieutenant.

MEDICAL NEWS

University of Cambridge.

At recent examinations the following candidates were successful:—

D.M.R.E.

Part I.—G. I. Benjamin, C. C. Divanji, E. D. G. Gillies, John Lumb, A. B. Sullivan, and J. B. Watson.

Part II.—J. S. Brown, G. T. Calthrop, E. N. Cook, E. R. Crisp, Marjorie P. C. Greene, J. P. Grieve, H. J. Ham, J. P. Hederman, M. H. Hellman, J. N. Jacobson, J. L. Razdan, F. G. Stewart, and E. R. Williams.

University of London.

At recent examinations the following candidates were successful:—

D.P.H.

Part I.—C. A. Bozman, C. J. H. Brink, C. G. H. Campbell, E. J. de Verteuil, Mary G. H. Dickson, A. R. Forbes, Agnes B. Francklyn, T. O. Garland, J. C. P. Grey, T. C. John, F. B. Khambatta, George Macdonald, H. A. Mackenzie-Wintle, Dorothy Makepeace, R. B. Mayfield, R. M. Morris, A. R. Thompson, and K. C. Uppal.

National University of Ireland.

University College, Cork.—At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.CH.

Part I.—R. A. Coughlan, F. J. Geoghegan, D. C. Lawton, and D. G. O'Driscoll.

Part II.—James Fitzgerald and Thomas Sheahan.

D.P.H.

Mary C. O'Connell (second class honours) and Nora O'Connor.

University of Glasgow.

On April 16th, the following degrees were conferred:—

M.D.—P. J. Molloy and D. Russell (with commendation), J. W. Crawford, J. F. Hamilton, M. S. Purvis, B. Reid, and S. C. Shanks.

M.B.—A. C. Lendrum (with commendation), J. J. Barton, I. E. Bernstein, J. Bolton, W. Boyd, W. Brownlie, R. P. Butler, I. Camrass, S. A. Carloo, W. G. Cowan, Edith D. Dempster, W. M. Dennison, M. C. Dickson, M. C. G. Dods, Mary M. Downes, J. S. Gemmill, J. D. Gillies, Margaret R. Gilmour, Margaret M. Goudie, D. Houston, A. Kelly, G. A. Macdonald, T. C. Macdonald, Barbara A. A. McGeachy, J. McGovern, I. R. MacIntyre, I. MacKinnon, D. T. Maclay, E. McNamara, A. McD. Maiden, H. D. Miller, D. Murray, J. H. Neill, A. F. Rodger, L. D. W. Scott, W. B. Shaw, D. M. Walker, and R. J. Wotherspoon.

Scottish Conjoint Board.

As a result of recent examinations of the conjoint examining board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates have been granted the diplomas of L.R.C.P. Edin., L.R.C.S. Edin., L.R.F.P. & S. Glasg.:—

B. D. J. van Rensburg, L. J. Wigston, P. H. A Gromelski, M. A. Walker, M. U. Ahmad, R. L. Chamberlain, Maurice Cohen, H. A. Bramwell, Alexander Reid, Euphemia Cardwell, A. E. Albuquerque, J. T. Cumming, W. C. Ross, Julius Meyer, M. M. Ghosh, J. B. Macdonald, M. M. El Hennawi, John Stewart, and M. J. Moynihan.

Royal College of Surgeons of England.

A meeting of the council was held on April 14th, with Lord Moynihan, the President, in the chair. Sir Henry Newland was introduced, and presented an address on behalf of the Royal Australasian College of Surgeons, of which he is president.

The following diplomas were granted:—

F.R.C.S.—H. O. Clarke (Dublin, Middlesex, and St. Thomas's). *M.R.C.S.*—Sarah N. S. Barker (Leeds), A. L. Kenyon (Manchester), and R. S. Sandhu (Punjab).

D.T.M. & H.—Genesis Ameratunga (Ceylon), R. M. Buchanan (Glasgow), Dorothy D. Chacko (College of Physicians and Surgeons, New York), Jane G. E.-F. Cummins (Dublin), G. C. H. Franklin (Cooper Med. College), H. S. Gear (Witwatersrand), Amanda Hoff (Columbia), C. G. Hoole (Ceylon), S. R. Iyengar (Madras), Sirisena Petiyagoda (Ceylon), A. V. Pieris Ceylon), G. W. Puvimanasingham (Ceylon), Henry Richards (Guy's), John Rodger (Edinburgh), B. N. Sharma (Punjab), Mabel I. Silver (Maryland), Ramasawmy Sivasambandan (Madras), J. T. Smith (Colorado), R. H. B. Snow (Cambridge and St. Thomas's), C. A. Stanley (St. Thomas's), R. T. Unruh (Kansas), and J. E. Walcott (Glasgow).

Mr. J. H. Badcock (London) and Mr. H. B. Roderick (Cambridge), being members of the College of over 20 years' standing, were elected to the Fellowship.

The Jacksonian prize for 1931 was awarded to Mr. J. Paterson Ross, F.R.C.S., of St. Bartholomew's Hospital, for his essay on the Surgery of the Sympathetic Nervous System. A certificate of honourable mention for an essay on the same subject was granted to Mr. Lambert Charles Rogers, M.R.C.S., of the Royal Infirmary, Cardiff. For the year 1932 the subject for the Jacksonian prize is the Pathology, Diagnosis, and Treatment of Diverticula of the Large and Small Intestine, and for the year 1933 the Pathology, Diagnosis, and Treatment of Localised Rarefying Changes in Bones, as illustrated by Perthes' (or Legge's) disease, Schlatter's disease, Kümmell's disease, and allied conditions.

The President announced that the trustees of the late Lord Leverhulme had made a grant of £1000 for research scholarships, and proposed to allocate a similar sum in future years. A resolution expressing appreciation of the gift was unanimously adopted.

British College of Obstetricians and Gynæcologists.

The *quarterly meeting* of the council was held on April 11th. It was decided that in future the president, treasurer, and honorary secretary should be elected at the July meeting of the council, and take office at the autumn meeting. Prof. W. Blair Bell (Liverpool) was re-elected president until the autumn meeting of the council in 1932, when the maximum term of office allowed by the articles of association expires. The term of office of Prof. Munro Kerr (Glasgow) having expired, Sir Ewen Maclean (Cardiff) was elected vice-president in his stead. Dr. J. S. Fairbairn (London) was re-elected vice-president. Mr. Eardley Holland (London) was elected treasurer, and Prof. W. Fletcher Shaw (Manchester) hon. secretary. Dame Louise McIlroy and Sir Henry Simson were coöpted to the council until the next annual general meeting.

The President intimated that the extended time for acceptance of invitations to the foundation Fellowship or Membership had now expired (the Dominions and India excepted). It would now be necessary for all prospective entrants to the College to obtain the ordinary Membership. It was also announced that reference committees had been established in Canada and India, and that all applications for Membership from these Dominions would now be referred to these committees, and only candidates whose applications are endorsed by the respective reference committees would be permitted to take the examination for Membership.

At the *annual general meeting* on April 11th the following were admitted to the Fellowship:—

Trevor Berwyn Davies, Donald MacIntyre, Alexander Croydon Palmer, and Wilfred Shaw.

The following were admitted to the Membership:—

Elizabeth Grace Elspeth Baillie, Arthur Capel Herbert Bell, Alison Mary Hunter, Elinor Drinkwater Jackson, Ralph Lodge, Louisa Martindale, Charles David Read, William George Richards, and Albert Sharman.

It was announced that the following had been elected to the council to fill the vacancies caused by the statutory retirement of one-third of the members thereof:—

Representatives of the Fellows: Dr. J. S. Fairbairn (London); Sir Ewen Maclean and Prof. Miles H. Phillips (Provinces); Prof. J. M. Munro Kerr (Scotland). Representatives of the Members: Dr. C. P. Brentnall (Provinces); Dr. R. A. Lennie (Scotland); Dr. R. H. J. M. Corbet (Ireland).

The President announced that, through the help of an anonymous donor, the council has decided to purchase a home for the College in London. It was felt that the present satisfactory state of the College finances, and the help accorded by Lord Riddell, justified the undertaking, though it was fully realised that it was a big financial responsibility. Lord Riddell's donation was for a period of seven years only, and efforts must be made to secure sufficient capital to replace it as a source of income at the end of this time. The opening of the College House would take place, if possible, on the same day as the annual dinner in the autumn.

The meeting unanimously approved of a memorandum on the obstetrical and gynæcological training of medical students, prepared by the council for submission to the General Medical Council.

Church Missionary Society.

The annual meeting of the Medical Mission Auxiliary of the C.M.S. will be held in the Central Hall, Westminster, at 7 P.M. on Wednesday, May 4th. Field-Marshal Sir Claud Jacob will take the chair and the speakers will include Dr. H. T. Holland (Quetta), Mrs. C. Bacon, M.B. (Kweilin, Kwangsi-Hynan), and Mr. J. Howard Cook, F.R.C.S. Tickets may be obtained from the Superintendent, Loan Department, Church Missionary Society, Salisbury-square, London, E.C.4.

Crystal Analysis.

The discourse to be given by Sir William Bragg at the Royal Institution conversazione on May 6th will be related to the various developments in pure and applied science which have depended on the use of the X ray methods of analysing crystal structure. In order to supplement the discourse, an exhibition is being arranged which will demonstrate more fully the work that has been done. Members of scientific societies, senior students of universities and technical institutions, and others interested in this work will be admitted if they present themselves at the Royal Institution, 21, Albemarle-street, London, W., between 10 A.M. and 6 P.M. on Monday, May 9th, or Tuesday, the 10th.

Reinstatement of Medical Man.

Some three weeks ago Dr. G. Staveley-Parker was dismissed from the honorary staff of Stamford Infirmary in consequence of complaints by the nursing staff of alleged breaches of rules of the contributory scheme. Last week by 25 votes to 20 the governors decided to reinstate him. A further resolution that the governors approved the action of the staff of the infirmary in bringing certain irregularities to their notice was put to the vote and lost. The committee of the benevolent fund of Rutland Engineering Works had threatened to withdraw their annual grant of £300 unless Dr. Parker was reinstated. It is reported that the Marquess of Exeter, president and chairman of the infirmary, and other governors, have since resigned.

Society for Relief of Widows and Orphans of Medical Men.

At a quarterly court of directors of this society, held on April 13th, Mr. V. Warren Low, president, being in the chair, the death was reported of the widow of a member who died in 1897; during this 15-year period she had received in grants £2120. Her husband had been a member for eight years and paid in subscriptions £16 16*s*. The expenses for the quarter were £84 17*s*. 6*d*. Grants to the amount of £166 5*s*. were voted—£91 to orphans who had reached the age of 16, at which age the ordinary grants cease, to enable them to continue their education or start in some professional or business career. One widow who applied for assistance was awarded a grant of £60 per annum, with £50 per annum to each of two children. The annual general meeting of the society, membership in which is open to any registered practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross, will be held on May 11th. Particulars on application to the Secretary at the offices of the society, 11, Chandos-street, Cavendish-square, London W.1.

Contraceptive Clinics in Manchester.

The medical officer of health for Manchester, Dr. R. Veitch Clark, has circulated a statement that clinics are being opened this month at Withington Hospital and Crumpsall Hospital, where patients can get instruction in methods of contraception. The medical officers, who are Dr. Olive Gimson and Dr. Elizabeth Byrd respectively, will attend fortnightly for sessions of two hours. The clinics are being provided, it is stated, in strict accordance with the Ministry of Health's Memorandum, which required that instruction in contraceptive methods shall be given only in cases where *for medical reasons* pregnancy is contra-indicated. Practitioners are invited to send patients with a card or note of introduction stating the nature of these reasons. The clinics form an integral part of the gynæcological and maternity section of the hospitals, and are in no way differentiated from the ordinary hospital provision. They will be known as the mothers' clinics, and attention will be paid to the privacy and comfort of those who attend.

Diagnosis and Treatment of Venereal Diseases.

A course of instruction in this subject begins this week at the Municipal Clinic, 155, Regent-road, Salford. Meetings will be held once a week.

Chadwick Lecture in Paris.

Sir Humphry Rolleston, Regius professor of physic in the University of Cambridge, delivered a Chadwick lecture in Paris on April 8th. His subject was the Pioneers and Progress of Preventive Medicine. Sir Humphry was officially welcomed by Dr. J. P. G. Meillère, President of the Academy of Medicine of France, and after the lecture Prof. C. Hartmann and Prof. C. Achard spoke on the community of public health ideals in the two countries.

Darwin's House.

It is announced that the house and grounds of Down House, at Downe, in Kent, where Darwin lived for 40 years, are open to the public without charge from 10 A.M. to 5 P.M. on Sundays and weekdays alike.

Public Health in the Tropics.

A Chadwick lecture on the Educational Aspect of Public Health Work in the Tropics, with special reference to Kenya Colony, will be given by Dr. J. H. Sequeira, late President of the Kenya Branch of the British Medical Association, in the council room of the Association, Tavistock-square, London, W.C., at 5.15 P.M., on Thursday, April 28th.

Talking Films for a Hospital.

The Royal Devonshire Hospital at Buxton is to be provided with a "talkie" apparatus at the cost of Coöperators, many of whom are sent to the institution for treatment for gouty and rheumatic affections. The films will be provided free of charge by a cinema company.

Scarcity of Young Doctors.

At the annual meeting of governors of Rotherham Hospital comment was made upon the scarcity of newly qualified medical men. It was stated that the hospital had spent £70 upon advertising and travelling expenses in connexion with medical appointments.

Central London Ophthalmic Hospital.

It was reported at the annual meeting last week that the new nursing home for private patients had already justified itself by results. Small contributions by patients again increased.

Presentation to a Surgeon.

On retiring from the active staff of the Royal Liverpool Children's Hospital, after 32 years, Mr. R. C. Dun was last week presented with a portrait of himself, given by subscribers to the hospital and personal friends. He has been elected to the council of the hospital and appointed consulting surgeon.

Bayliss-Starling Scholarship.

Application is invited for this scholarship, of the annual value of about £120 (with exemption from tuition fees) tenable at University College, London. The scholar will be required to follow a course of study involving a training in the principle and methods of research in physiology and biochemistry. Application must be made in proper form by May 14th.

Conference on Sterilisation.

A Conference on Voluntary Eugenic Sterilisation will be held at the Caxton Hall, Westminster, on Monday, May 23rd (morning and afternoon). The speakers will include Sir Thomas Horder, Dr. R. Langdon-Down, Mr. C. J. Bond, and Dr. C. P. Blacker. Particulars may be had from the secretary of the conference, at 16, Mulberry-walk, London, S.W.3.

Invalid Children's Aid Association.

The annual meeting of this association will be held at 3 P.M. on Tuesday, May 3rd, at Crewe House, 15, Curzon-street, London, W., by permission of Lord and Lady Crewe. Lord Titchfield will take the chair, and the speakers will include Lady Snowden and Sir William Hale-White. The address of the Association is 117, Piccadilly, W.1.

Children's Hospitals.

The Children's Hospital, Paddington, received last year almost exactly the same number of in-patients, 792, as in 1930. They cost £3 14*s.* per week—a slight reduction; the 42,000 out-patients cost 7*s.* 10*d.* each. The children's parents voluntarily contributed £735.—Last week Major General J. E. B. Seely opened a new out-patients' department at the Invalid and Crippled Children's Society's Hospital at Plaistow, and the building was dedicated by the Bishop of Barking. Dr. F. G. Collins, medical officer of health for West Ham, expressed a hope that there would soon be a clinic where mental cases among the young might be treated.

Devonshire Hospital, Buxton.

The committee of management of this hospital have recorded their thanks to Dr. C. W. Buckley, Dr. J. B. Burt, and Dr. William Shipton for their 20 years of service on the active honorary medical staff and have asked them to give the hospital the benefit of their experience for a further five years. This invitation has been accepted.

Charing Cross Hospital.

Last year the income increased by over £4000, and the expenditure fell by £800. The new casualty department has been completed, further dressing-rooms, a waiting-room, and an additional fully equipped theatre have been provided, and the main section of the new nurses' hostel in Haverstock Hill, Hampstead, has been erected. The hospital has provided two private omnibuses for the conveyance of the nurses to and from the hostel.

Donations and Bequests.

Among other bequests the late Mr. Richard Foster Bolitho, of Gulval, Cornwall, left £10,000 each to the West Cornwall Dispensary and Infirmary; the South Devon and East Cornwall Hospital; and the Royal Cornwall Infirmary, Truro; and £5000 each to the Devon and Cornwall Sanatorium for Consumption, Didworthy; the Sanatorium for Consumption, Tehidy; and St. Dunstan's Hostel for the Blind.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 25th.—8 P.M., ODONTOLOGY. Mr. W. Warwick James and Mr. Somerville Hastings: Mouth-breathing and Nasal Obstruction. A discussion will follow. LARYNGOLOGY. Members of the Section are specially invited to attend and to take part in the discussion.

TUESDAY.—5 P.M., MEDICINE. Short Papers: Dr. S. Harold Cookson: The Heart in Thyroid Disease. Dr. Adolf Schott (Bad Nauheim): The Respiratory Changes of Blood Pressure. Dr. A. Brian Taylor: Tuberculous Empyema. Dr. E. R. Cullinan: Dermatomyositis.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Annual General Meeting. Short Papers: Dr. T. Hare: Demonstrations of Pathological Cases in the Dog. (i) Pituitary Adenoma with Dystrophia Adiposo-genitalis. (ii) Neurocytoma of Suprarenal Gland. (iii) Fused Thyroid Glands. (iv) Aberrant Thyroid Tuberculosis in a Blackbird. Mr. A. B. Orr: A Note on the Incidence of Contagious Bovine Abortion in Great Britain. Dr. H. P. Bayon: Identical Primary Neoplasms (Nephromata) in Two Hens of the same Strain. Mr. J. T. Edwards: Rinderpest—Vaccination of Cattle with Goat-adapted Virus.

THURSDAY.—8.30 P.M., UROLOGY. Clinico-Pathological Evening. Cases and specimens.

FRIDAY.—Library closed at 5 P.M. 8.30 P.M., Reception. At 9.15 P.M., Dr. G. Norman Meachen will give a lecture-recital entitled Medical Musicians, illustrated by selections from some of their compositions.

HUNTERIAN SOCIETY.

THURSDAY, April 28th.—7.15 P.M. (at Simpson's Restaurant, Bird-in-Hand-court, E.C.), Annual General Meeting. Mr. James Ogden: Tutankhamen's Tomb. (Lantern lecture.)

MEDICO-LEGAL SOCIETY.

THURSDAY, April 28th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Mr. J. Bright Banister: The Gynæcologist in the Law Courts, to be followed by a discussion.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, April 29th.—8.30 P.M., Prof. F. J. Browne: Maternal Mortality in all Cases of Pregnancy which have Received Antenatal Treatment. A Discussion will follow.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, April 25th to SATURDAY, April 30th.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Course in Diseases of Children, mornings only.—INFANT'S HOSPITAL, Vincent-square, S.W. Course in Diseases of Infants, afternoons only.—MAUDSLEY HOSPITAL, Denmark-hill, S.E. Course in Psychological Medicine, afternoons.—LONDON LOCK HOSPITAL, Dean-street, W. Course in Venereal Diseases, afternoons.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Course in Diseases of the Ear, Nose, and Throat.—(These Courses are open only to Members of the Fellowship.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.
MONDAY, April 25th.—10 A.M. to 1 P.M., Gynæcological Ward, Surgical Wards. Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture), Mr. Addison: Tumours of the Breast.
TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Dr. Pritchard: Some Points in the Treatment of Gastric Ulcer.
WEDNESDAY.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients, 4.45 P.M., Venereal Diseases Demonstration.
THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Genito-Urinary, and Eye Out-patients. 4.15 P.M. (Lecture): Mr. Davenport: Differential Diagnosis of a Red Eye.
FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 12 noon, Medical Lecture. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Mr. Vlasto: Pain in the Ear.
SATURDAY.—9 A.M. to 1 P.M., Throat Operations, Medical and Surgical Wards, Surgical and Children's Medical Out-patients. The lectures at 4.15 P.M. on Mondays, Tuesdays, Thursdays, and Fridays are open to all medical practitioners without fee.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, April 27th.—4.30 P.M., Mr. W. K. Irwin: Some Important Diseases of the Prostate.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.
WEDNESDAY, April 27th.—3 P.M., Mr. A. H. Harkness: Treatment of Chronic Gonorrhœa.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, April 28th.—4.30 P.M., Mr. E. T. C. Milligan: Fistula.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, April 28th.—3 P.M., Dr. Anthony Feiling will demonstrate.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.
WEDNESDAY, April 27th.—4.15 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Clinical Cases. 5 P.M. Dr. Corsi: Onychia and Paronychia.

ROYAL INSTITUTION, Albemarle-street, W.
FRIDAY, April 29th.—9 P.M., Prof. H. Hartridge: The Rival Theories of Hearing.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
MONDAY, April 25th.—8 P.M., Prof. J. C. Drummond: Recent Researches on the Nature and Function of Vitamins. (Second of three lectures.)

MANCHESTER ROYAL INFIRMARY.
TUESDAY, April 26th.—4.15 P.M., Dr. W. Fletcher Shaw: The Price of Maternity.
FRIDAY.—4.15 P.M., Mr. W. R. Douglas: Demonstration of Surgical Cases.

UNIVERSITY OF BIRMINGHAM.
WEDNESDAY, April 27th.—4 P.M., Mr. C. J. Bond: Some Aspects of Human Biology. (Second of five William Withering memorial lectures.)

SALFORD ROYAL HOSPITAL.
THURSDAY, April 28th.—Dr. C. S. D. Don: Demonstration of Medical Cases.

VICTORIA INFIRMARY, Glasgow.
WEDNESDAY, April 27th.—4.15 P.M., Dr. W. Herbert Brown: Skin Cases.

Appointments

PRICE, MURIEL G., M.B., Ch.B. Belf., has been appointed part-time Medical Officer under the Belfast Maternity and Child Welfare Scheme.

SMITH, A. D., M.B., Ch.B. Edin., senior R.M.O., Sunderland Royal Infirmary.

Certifying Surgeons under the Factory and Workshop Acts: BARTON, N. J., M.D. (Borrowden, Rutland); RUST, F. P., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg. (Boroughbridge, W. Riding); ARMSTRONG, C. W. W., M.B., Ch.B. Oxf. (Framlingham, Suffolk).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Asst. P.
Altrincham General Hospital.—Jun. H.S. At rate of £120.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.
Brighton, Royal Sussex County Hospital.—H.P. £150.
Chesterfield and North Derbyshire Royal Hospital.—H.S. £150.
Colchester, Essex County Hospital.—Asst. H.S. £120.
Constance-road Institution, Dulwich, S.E.—Asst. M.O. £250.
Dalemere Forest, Cheshire Crossley Sanatorium.—Asst. M.O. £175.
Durham County Hospital.—Two H.S.'s. Each £150.
Ealing Borough.—Asst. M.O.H. £600.
Evelina Hospital for Sick Children, Southwark, S.E.—Cas. and Out-patient Officer. At rate of £120. Also Anæsthetist. 25 gns.
Halifax, St. Luke's Hospital.—Jun. Res. M.O. £250.
Hospital for Sick Children, Great Ormond-street, W.C.—Secretary. £750.
Hull Royal Infirmary.—H.P. for Sutton Branch Hospital. At rate of £160.
Ilford, King George Hospital.—Two H.S.'s. Each at rate of £100.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Kidderminster and District General Hospital.—H.S. £150.
Kingston-upon-Thames, Surrey County Council, Mental Hospital Service.—Jun. Asst. M.O. £350.
Leeds General Infirmary.—Hon. Asst. Physician.
Liverpool, Broadgreen Sanatorium.—Med. Supt. £900.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Med. Supt. £250.
London Female Lock Hospital, 283, Harrow-road.—Asst. Non-Resident Surg. Reg. £50.
London Jewish Hospital, Stepney Green, E.—Res. M.O. and Cas. O. Each at rate of £150. Also Jun. Res M.O. At rate of £100.
Lowestoft, St. Luke's Hospital.—Res. Asst. M.O. £350.
Manchester, Abergele Sanatorium.—Jun. Res. M.O. £350.
Manchester, Royal Manchester Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.
Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.
Minehead, Somerset, Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.
National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Res. M.O. £200.
National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Phys.
Northampton General Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £150.
Oldham Royal Infirmary.—Two H.S.'s. Each at rate of £175.
Queen's Hospital for Children, Hackney-road, E.—Clin. Asst. for Med. Out-patients. 5s. each attendance.
Radcliffe-on-Trent, Notts, County Mental Hospital.—Second Asst. M.O. £450.
Reading, Royal Berkshire Hospital.—Two Cas. O.'s. Each £150.
Retford, Notts, Rampton State Institution.—Fourth M.O. £400.
Rochester, St. Bartholomew's Hospital.—H.P. and H.S. Each £175.
Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively.
St. Alfege's Hospital, Vanbrugh-hill, S.E.—Asst. M.O. £350.
St. Mark's Hospital for Cancer, Fistula, &c., City-road, E.C.—Clinical Asst. for Out-patients' Dept.
Sheffield, Jessop Hospital for Women.—Hon. Pathologist and Hon. Bacteriologist.
Sheffield Royal Hospital.—Two Asst. Cas. O.'s. Also Res. Anæsthetist. Each at rate of £80.
Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.
Wealdstone Parish.—District M.O. £100. Also Public Vaccinator.
Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.
Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

Births, Marriages, and Deaths

BIRTHS.

HORDER.—On April 16th, at Ben-lui, Boyne Park, Tunbridge Wells, the wife of Cecil A. Horder, M.B., F.R.C.S., of a son.
SMYTH.—On April 10th, 1932, at 22, Wimpole-street, W.1, to Esther, the wife of Michael J. Smyth, M.Ch., F.R.C.S.—a son.

MARRIAGES.

ORMEROD—PATERSON.—On April 16th, at Greenside Church, Edinburgh, George Lawrence Ormerod, M.B., Westbury-on-Trym, Bristol, to Violet Reid, youngest daughter of the Very Rev. Prof. W. P. Paterson, LL.D., University of Edinburgh.
RUSSELL—WOODWARD.—On April 16th, at St. Mary's Church, Wanstead, Brian Russell, M.D., M.R.C.P., to Phyllis, elder daughter of the late Captain G. B. Woodward and Mrs. Woodward, of Snaresbrook.

DEATHS.

GRAVES.—On April 13th, at the Sussex County Hospital, Brighton, Dr. Montague Graves, formerly of the West African Medical Service. Aged 46 years.
LOVEDAY.—On April 13th, suddenly, at Fleet, Hampshire, William Dunmore Loveday, O.B.E., J.P., M.R.C.S., of Hartfield-square, Eastbourne.
SALTER.—On April 17th, at d'Arcy House, Tolleshunt d'Arcy, Essex, John Henry Salter, D.L., J.P., D.P.G.M. (Essex), M.R.C.S., in his 91st year.
STEPHEN.—On April 11th suddenly, at Vordighera, Lieut.-Colonel Guy Neville Stephen, O.B.E., M.R.C.S. Eng., D.P.H. Lond., in his 75th year.
STONHAM.—On April 16th, at The Maples, Catherine-road, Surbiton, Henry Archibald Stonham, M.R.C.S., L.R.C.P., D.P.H., aged 72.
WOOLLETT.—On April 12th, Charles Jerome Woollett, M.D., F.R.C.S., of Ambleside, Streatham.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE CITY CORONERSHIP.

THE resignation of Dr. Waldo last month from his two coronerships (for the City of London and for the borough of Southwark) set in train various changes under the Coroners Acts. Section 4 of the 1926 Act, which prospectively abolished every franchise coronership as from the next vacancy, was expressly excluded from application to the City coroner; but Section 32 of the Act extended to the City coronership, as from the next vacancy, all enactments relating to borough coronerships. Thus in effect the City coronership ceases to have any special features except that it is still nominally a franchise coronership, and that it has special statutory jurisdiction under the City of London Fire Inquests Act of 1888. As to Southwark, previously a franchise coronership for which the City corporation made the appointment, and the London County Council paid the salary, the jurisdiction of the coroner will now be merged in the adjoining London coroners' districts and the franchise will disappear. There still remains the franchise coronership of the Liberty of the Tower to which the Constable of the Tower has power to appoint, the London County Council paying the salary. The appointment of Mr. Danford Thomas, the existing coroner for the Liberty of the Tower, to succeed Dr. Waldo in the City, brings these two adjoining franchises under the same officer's jurisdiction. The general law being now applicable to the City, it seems that Section 31 of the 1887 Act (expenses of inquests in the City and Southwark) has ceased to have effect.

The result of these charges on the duties and emoluments of the City coroner's office appeared in the recommendations made to the City Corporation by its Officers and Clerks Committee. The committee considered that the newly appointed coroner need not give his whole time to his duties, and recommended that his salary be £700 a year, with £100 towards expenses, exclusive of actual disbursements under the approved schedule.

BLOOD TRANSFUSION APPARATUS.

A NEW apparatus for the transfusion of untreated blood has been elaborated during the last two years by Dr. Bürkle de la Camp, of Munich. The principle is similar to that of the older Kimpton's tube, but it embodies certain notable improvements. The Kimpton's tube was a vertical glass vessel holding 600 c.cm. of blood, clotting being prevented by an inner lining of paraffin wax. The blood entered from the donor's vein through a needle at the bottom of the tube, and the flow could be encouraged by partially exhausting the vessel with a Higginson's syringe attached to the top. The needle was transferred to the recipient's vein, and the blood was allowed to flow in by gravity or could be assisted by reversing the Higginson's syringe and using it as a pump. The paraffin lining had to be renewed every time the tube was used, and the process of renewal was not easy. Unless the transfusion was effected rapidly, clotting was apt to take place in the needle or at its junction with the tube, so that the operator had to be an expert. The new apparatus eliminates these difficulties. The vessel is made of a substance, patented under the name of Athrombit, which is said to be a condensation product of phenol and formaldehyde, or "synthetic amber," and has been found to have remarkable powers of retarding coagulation of the blood. It is transparent, hard, but not so brittle as glass, and is a bad conductor of heat, so that the contained blood does not readily cool. The second main advantage of the apparatus is the introduction of the Ainit needles. These are made of steel which is highly polished inside as well as outside, so that again clotting of blood in contact with them is retarded. The top of the vessel is closed with a three-way cock, so that the blood can be pumped into the recipient with a rubber bellows. The apparatus is beautifully finished, and the method appears to be a great improvement on the older one for use by those who believe it is important to have untreated, rather than citrated, blood. The only bar to its free use seems to be the price; for Athrombit is expensive, and there is considerable wastage in the process of making the vessels. The complete outfit is made with containers of two sizes, holding 300 and 600 c.cm. respectively, and the prices for free delivery in the United Kingdom are £15 15*s.* and £17 10*s.* We understand that the apparatus has been in use at the German Hospital for some time, and has given great satisfaction. It is sold by Mr. F. Walser, 269, Gray's Inn-road, W.C., who describes himself as sole agent for Great Britain and the Colonies.

MEDICINE AT SHANGHAI.

THE March number of the *Chinese Medical Journal*, published at Peking, contains an editorial on the Medical Aftermath of the Conflict in Shanghai. In this conflict, says the writer, have perished all the newly erected defensive fortresses of preventive medicine—the hospital of the National Quarantine Service, the Central Hygienic Laboratory, and all the laboratories and health stations operated by the public health department of greater Shanghai. Two well-known medical schools—Tung Chi and the National Medical Colleges—have also suffered considerable damage; and as all these works have been built up at great financial sacrifice their loss is almost irreparable. The article continues:—

"Shanghai is also going to reap the whirlwind in another form. The overcrowding of the healthy and the sick in the already congested International Settlement present unusual difficulty for preventive medical control. This state of affairs may provoke at any time fatal outbreaks of contagious and infectious diseases from which the environs of Shanghai is seldom free. The public health department of the S.M.C. is not unaware of this danger. Assisted by the citizens' emergency committee, the department is taking all the necessary precautions, but its activities may not be able to reach those who are outside the war refugee camps. Weakened by want, depressed by the horrors of war, and disheartened by a hopeless future, these innocent victims of a 'defensive' war may prove defenceless against any imported virus (now that the National Quarantine Station and the health department of the municipality of Greater Shanghai have been rendered hors de combat) and start an epidemic. With all the hospitals, general and auxiliary, filled to overflowing, once under way it will be difficult to check and there is no knowing where and when it is going to end."

SEASONAL VARIATIONS IN CATS.

THREE workers, E. Armitage, R. J. S. McDowall, and S. N. Mathur [1] have been carrying out experiments on cats in order to establish that there is a seasonal variation in the response of the circulation in these animals to various procedures. They find that in spring the blood pressure rises independently of external temperature, that the respiratory rate is somewhat slower, the oxygen consumption lower, and the response to sensory stimulation increased. They come to the conclusion that all evidence points to the fact that the nervous system is more sensitive in spring; that the parasympathetic is reduced in activity is suggested by the deeper respirations, the constricted pupil, and the difficulty in obtaining reflex slowing of the heart on stimulation of the central end of the vagus at this time of the year. As an interesting corollary to this Sir Edward Sharpey-Schafer relates that when demonstrating in London he often failed to get cardiac inhibition or vagal stimulation, whereas in Edinburgh he was usually successful. He was at first inclined to put this down to difference in climate, but he remembers that he was in the habit of demonstrating this experiment in London during the autumn term and in Edinburgh during the spring term.

[1] Quart. Jour. Exper. Physiol., 1932, xxi., 365.

VACCINE PROPHYLAXIS IN A CHILDREN'S HOSPITAL.

AN experiment in Prof. Frölich's wards of the Rikshospital in Oslo is recorded by Dr. L. Stoltenberg,[1] whose observations cover two periods. The first, or control period, was between January, 1922, and March, 1925. During the second period, October, 1927, to May, 1931, all the children who were admitted to hospital and who showed no special contra-indication to inoculation, such as fever, were given subcutaneous injections of a polyvalent vaccine made from cultures obtained from the throats of all the children admitted to the Rikshospital over a considerable period. This period included epidemics of influenza as well as free intervals. As a rule, three injections were given each child at intervals of four days. The records of influenzal infections in the first control period were not as complete as in the second period, and the comparison was unfair to the prophylactic treatment, which, nevertheless, is held to have emerged with great credit. In the control period there were 496, and in the inoculation period 487 children. "Influenzal" infection was seen among 56 per cent. of the controls under the age of 1 year, but only among 12·9 per cent. of the inoculated children of the same age; the corresponding figures for children over the age of 1 year were 47 per cent. and 21 per cent. respectively. The incidence of influenzal complications told the same tale. There were 97 cases of bronchitis among the controls, and only 8 among the inoculated; there were 21 cases of pneumonia or broncho-pneumonia among the controls, and only 11 among the inoculated. Otitis occurred in 19 controls, and in 9 of the inoculated. As the incidence of the influenzal diseases showed no marked differences in Oslo in the two periods, it is thought that the comparative freedom of the inoculated children cannot have been due to a general decline of infective virulence.

NEW PREPARATIONS.

T.C.P. B[3] COLLOIDAL EMULSION (British Alkaloids' Ltd., Winchester House, London, E.C.) is another form of the T.C.P. preparation (trichlorophenyl-methyliodosalicyl) described in THE LANCET of Jan. 11th, 1930 (p. 114). The new colloidal emulsion is intended as a medicament for internal employment in various intestinal conditions, and the percentage composition is given as follows: trichlorophenyl-methyliodosalicyl, 1·00; tribromoacetyliodoortho-oxybenzoic ac., 2·00; T.C.P. bismuthate, 1·50; colloidal aluminium silicate, 2·00; glycerin, 3·00; distilled water, 90·50. For adults a tablespoonful is taken morning and evening before meals in four tablespoonfuls of water; in acute cases the emulsion can be taken three times a day. The dosage for children is, according to age, from one to two teaspoonfuls in four to eight teaspoonfuls of water, morning and evening, before meals.

ELITYRAN (Bayer Products, Ltd., 19, St. Dunstan's-hill).—This is a preparation of thyroid for use in routine practice, but especially where intolerance has been shown to thyroid preparations generally. The claims of the manufacturers for Elityran over the B.P. preparation are that no unpleasant sequelæ follow, because exact standardisation enables the dosage to be gauged with precision. It is readily soluble, and is issued in tablets of 25 mg. each, in tubes of 30.

ADEXOLIN LIQUID (Glaxo Laboratories, 56, Osnaburg-street, London, N.W.).—A tasteless and odourless concentrated liquid which has been assayed and standardised to contain the vitamins A and D to an amount equivalent to 20 times its own volume in cod-liver oil. It is put forward as a means of administering the vitamins without the use, inconvenient in many cases, of cod-liver oil; for it can be given to persons with sensitive stomachs without producing digestive disturbances, while its use is indicated where there is fat intolerance and acidosis. The preparation is put up in 8 c.cm. bottles with a dropper affixed to the screw cap, and one drop from this dropper equals exactly half a minim. The suggested doses are, for infants, two drops added to three or more feeds a day; for children, six drops, three times a day with meals; and for adults, ten drops three times a day with meals; but the doctor may considerably increase the doses, if thought desirable, without apprehension.

[1] Norsk Mag. f. Lægevid., February, 1932.

CAPTURE OF WILD RABBITS.

ON an estimate made by Dr. A. H. B. Kirkman in a paper circulated by the University of London Animal Welfare Society,[1] hundreds of thousands of rabbits are tortured in traps every night throughout the winter, in Great Britain alone. The law requires that the traps should be visited once in the 24 hours, but in practice this is difficult to enforce, and in any case animals caught soon after sundown suffer until the next day. Were this the only method of ridding the country of animals regarded as vermin some arguments might be used in favour of it, but there is ample evidence that rabbits are largely regarded as game and preserved. A consensus of opinion obtained from the chief constables in the principal trapping counties is entirely in favour of humane methods and opposed to the use of the steel trap. Poachers make use of netting followed by immediate slaughter, and are able to secure large numbers of rabbits in this way. Other humane methods recommended by Dr. Kirkman are the long net, the gate-net, the gate-trap and digging-out; but the method which can be most successfully and kindly used for extermination is poisoning by carbon monoxide gas, obtained from the exhaust pipe of a car and transmitted to the burrows by means of a garden hose. Hundreds of rabbits can be quickly and mercifully killed in this way, and though the bodies are not accessible without digging, the flesh is not made poisonous by the gas. Among more or less humane methods he classifies the Lewis snare, the purse-net used with ferrets, and shooting, with ferrets or with beagles and beaters. The Rabbits Bill would give to the county councils the power to intervene for the purpose of destroying rabbits where these have been allowed to multiply to the extent of becoming a nuisance to neighbours, and subclause 1 (7) would prohibit the use of any spring trap. Dr. Kirkman suggests that the words "spring trap" should be replaced by "trap having jaws adapted to grip the limbs," or "trap calculated to inflict suffering."

INCOME TAX.

Mr. W. R. Fairbrother, of Bush House, Aldwych, London, writes: "Your readers may anticipate that during this month they will be receiving forms requiring returns of their income for 1932–33. It will save considerable trouble if care is used in completing the forms in their entirety, and incidentally by doing so your readers will be sure of having claimed all the usual reliefs to which they are entitled. There are cases in which less obvious adjustments can be secured, such as relief from double assessment, allowance for interest to bank or building society, and setting off loss in one business against profit in another. An alternative to the last-mentioned is to carry the loss forward, and a decision between the two methods requires careful consideration to avoid the loss of benefits by not taking full advantage of the possibilities of each individual case. Those of your readers who marry during the coming year, or have done so during the past six years, should be careful to obtain the allowances due as from the date of the ceremony, not forgetting that second marriages sometimes give opportunity for claiming double children's allowance in the year of marriage."

[1] The hon. secretaries are Captain C. W. Hume, 14, The Hawthorns, London, N.3, and Miss C. M. Knight, 6, Forresgardens, N.W.11.